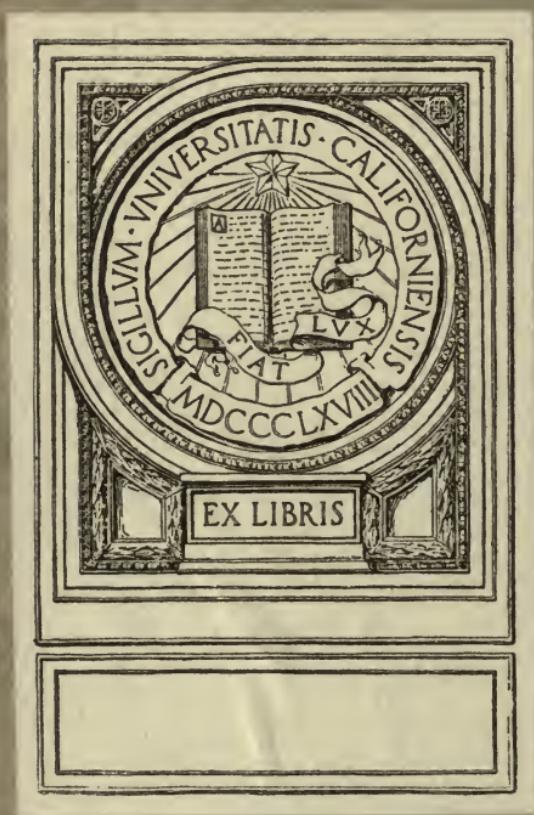


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THE
GEOGRAPHY OF EUROPE

PREPARED AND ISSUED UNDER THE
AUSPICES OF THE DIVISION OF
GEOLOGY AND GEOGRAPHY
NATIONAL RESEARCH COUNCIL

THE GEOGRAPHY OF EUROPE

A PRESENTATION OF SOME ASPECTS
OF EUROPEAN GEOGRAPHY FOR THE
USE OF MEMBERS OF THE STUDENTS'
ARMY TRAINING CORPS

Edited by
ELLSWORTH HUNTINGTON
and
HERBERT E. GREGORY

PREPARED AND ISSUED UNDER THE AUSPICES OF THE
DIVISION OF GEOLOGY AND GEOGRAPHY
NATIONAL RESEARCH COUNCIL



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FOREWORD

THE Committee on Education and Special Training of the War Department has included geography in the curriculum arranged for the Students' Army Training Corps and has called attention to the fact that the branch of the science which contributes most directly to present needs is the Geography of Europe. On reviewing the field, the Committee found that provision for geographic instruction was lacking in most educational institutions, and that courses in the Geography of Europe had been organized in less than 10 per cent of the colleges and universities enrolling Students' Army Training Corps. Available text books, maps, and other apparatus for teaching also were found to be deficient in quantity and unsatisfactory in quality. Under such circumstances it is obvious that no large amount of satisfactory geographic instruction can be given during the present year nor in later years until strong departments of geography are established at many institutions. It is, however, highly desirable that information regarding the physical geography of Europe and the industries and manner of life of the people be presented in some form to prospective officers, and as a means to this end this course in the Geography of Europe has been prepared under the auspices of the National Research Council.

This book is largely the result of contributions from a group of men in active Government service. In the brief time available, manuscript has been furnished by the following:

Herbert Bassett, War Trade Board, professor of geography, Normal School, Macomb, Ill.;

N. A. Bengston, War Trade Board, professor of geography and conservation, University of Nebraska;

C. E. Bonnett, War Trade Board, professor of economics, University of New Mexico;

A. P. Brigham, professor of geology and geography, Colgate University;

C. C. Colby, United States Shipping Board, assistant professor of geography, University of Chicago;

S. W. Cushing, captain, United States Army, professor of geography, Salem Normal School;

8 AIM AND SCOPE

Leon Dominian, American Geographical Society;

V. C. Finch, United States Shipping Board, associate professor of geography, University of Wisconsin;

Herbert E. Gregory, National Research Council, professor of geology, Yale University;

W. H. Haas, United States Shipping Board, assistant professor of geography, Northwestern University;

Ellsworth Huntington, captain, United States Army, research associate in geography, Yale University;

G. R. Mansfield, geologist, United States Geological Survey;

E. B. Mathews, professor of geology, Johns Hopkins University;

C. J. Posey, War Trade Board, assistant professor of geography, University of Minnesota;

A. L. Pugh, War Trade Board, chairman, department of economics, High School of Commerce, New York City;

J. R. Rich, captain, United States Army, professor of geography, University of Illinois;

G. B. Roorbach, United States Shipping Board, assistant professor of geography, University of Pennsylvania;

J. Russell Smith, War Trade Board, professor of industry, University of Pennsylvania;

R. H. Whitbeck, War Trade Board, professor of geography, University of Wisconsin;

F. E. Williams, captain, United States Army, assistant professor of geography, University of Wisconsin.

In the preparation of the pamphlet the limitations of time and the exigencies of war work have made it impossible to follow out a thoroughly logical and well-rounded plan. The aim has been to put together material which if studied systematically will yield a fairly satisfactory picture of the geographic conditions of Europe. The book will have served its purpose if it increases the efficiency of American soldiers even to a small degree.

The method adopted assumes that the student will work out the outlined problems under the teacher's guidance and that the teacher will supplement and otherwise modify the text in accordance with his interests and facilities for instruction. It will be noted that the problems are so arranged that they may be expanded or contracted, and that they may serve as guides in the preparation of lectures as well as material for classroom exercises.

It is planned to issue a revised and enlarged edition, and teachers

and other readers are invited to collaborate by offering suggestions for improvement. Communications may be addressed to Professor Herbert E. Gregory, Yale University, New Haven, Conn.

National Research Council,
Division of Geology and Geography,
October 10, 1918

ESSENTIAL BOOKS

In teaching the course as outlined, the following books are essential, and it is assumed that the classroom will be supplied with a sufficient number of each to permit many students to work at one time:

1. A physical atlas showing physical, climatic, political features. The following are recommended: Longmans' New Atlas, Longmans, Green & Co., New York; Bartholomew's Atlas of Economic Geography, Oxford University Press; Bartholomew's Atlas; Phillip's Atlas.
2. An encyclopedia, such as the International or the Britannica.
3. Mill's International Geography, D. Appleton & Co., New York.
4. The Atlas of World Agriculture, U. S. Department of Agriculture.
5. The World Almanac, or similar handbook.
6. The Statesman's Yearbook.

A selected list of books for supplementary reading will be found on page 96.

A list of lantern slides suitable for this course may be obtained from the National Research Council, 1023 Sixteenth Street, Washington, D. C.

PART I

EUROPE AS A WHOLE

INTRODUCTION

THE most remarkable characteristic of Europe is its enormous influence upon the rest of the world—its power of leadership. The term “European” is almost synonymous with “civilized.” For instance, in the Orient the term European is applied to Americans, Canadians, Australians, and any others who appear to be highly civilized. Americans who have long resided in China often call themselves part of the European community. When we wish to indicate that Japan is different from most oriental countries, we say that it is European in its spirit. Again, a native of the Tropics with some education is often described as a man with a veneer of European polish but at heart a true son of the Tropics. So it is in almost every line. The United States has long striven to make its neighbors in South America realize the importance of this country, but they still turn largely to Europe as their great model. Buenos Aires, for example, strives to imitate Paris, not New York. In Japan we were the pioneers in showing the way to “European” civilization, but after we had opened the door our place was soon taken by teachers directly from Europe.

The high esteem in which the rest of the world holds Europe is not to be wondered at. Since the days of Christ that continent has contributed most of the great ideas which have hastened the march of civilization. In art, in literature, in science, in education, in government, the progress of the world has almost wholly come from Europe. In religion, to be sure, Asia has contributed Mohammedanism, just as in earlier days it contributed Christianity, Judaism, Buddhism, and Hinduism. Yet even in religion practically all the great steps of progress during the past 1800 years have been made in Europe. If we try to sum up what each of the continents has contributed to the world's progress during those eighteen centuries, the importance of Europe becomes overwhelming. Asia has given little except Mohammedanism, Japanese art, and the slight influence which Hindu philosophy and Japanese ideals of loyalty are now exerting upon other countries. Africa has contributed no new idea of any great importance. The

same is true of South America. Australia has done a little better, for the mention of that continent brings to mind certain important ideas as to labor legislation, the functions of the government, and other progressive policies which are having a real influence upon other countries. North America stands still higher in this respect. There can be no doubt that American ideas of government and of human rights are having a profound effect upon many nations in other continents. So, too, certain American inventions and scientific discoveries are causing life to assume new aspects all over the world. Our telegraphs, telephones, sewing machines, harvesters, and other kinds of labor-saving machinery, for example, are unquestionably causing American influence to pervade all the continents. Yet the seeds of most of our ideas came from Europe. Without our help Europe would have been almost as advanced as it is today. Its transportation system, its factories, its art, its literature, its education, its government, and its religion would have been a little different if there had been no America, but the difference would have been slight. Only since America entered the Great War has its effect on Europe been notable. On the other hand, in every respect America would have been enormously different if there had been no Europe.

Only a part of Europe possesses this wonderful power of influencing and leading the rest of the world. This part is western Europe from Italy and Austria northwestward. England possesses the power of leadership to a superlative degree. France and Germany, together with the small countries adjacent to them, also possess it strongly. Austria, Italy, and Scandinavia come next in influence upon the movement of world affairs. Spain takes a lower rank today, although a few centuries ago its influence was greater than that of almost any other country. Russia, although located in eastern Europe, has some of the western power of leadership. Yet it wholly fails to stand on a par with the other great countries, such as England, France, and Germany. Its presence in Asia, for example, has changed the habits and thoughts of the native inhabitants far less than has the presence of England in India. Moreover, its influence upon the activities of the other great powers is by no means equal to that of any one of the three great powers farther west. Thus we may say that only the western half of Europe today takes a leading part in the great movements which cause the words "Europe" and "civilization" to be almost inseparable.

The most striking example of the surpassing influence of Europe

is seen in the Great War. Contrast the effect of this war with that of some of its recent predecessors. When Spain and the United States went to war, the main currents of the world's affairs suffered only a gentle ripple. Many a man in the more backward parts of the world did not know that such a war was taking place. Even in countries like Canada and France, near neighbors of the powers that were at war, the average citizen could not detect any difference in his daily life because of the war. When England fought the Boers, the rest of the world pursued its ordinary course. The war between China and Japan (1894) did not particularly affect other countries, although a quarter of the earth's population was nominally fighting. Russia's conflict with Japan stirred more interest than did the Japanese war with China, but except for what he read in the papers the average American had no reason to feel that anything unusual was happening.

Then came the Great War. If Austria and Russia had fought it out alone, the rest of the world could have looked on with comparative equanimity. When Germany and France entered the struggle, however, the whole situation changed. The center of the most influential part of the world was on fire. The bonds of transportation and communication that connect the world have become so close that the fire ran out in every direction. England found itself in the conflagration at once. Then the dominance of Europe in the affairs of the world became evident. Nation after nation joined the conflict, until on one side 18 and on the other side 4 had actually declared war, and 10 others had broken diplomatic relations with Germany. Moreover, every inhabited part of the world has felt the effect of the war. Perhaps some wandering Eskimo or some Pigmy in the heart of Africa may never have heard of it. But even the Eskimo and the Pigmy have almost certainly found that sharp knives and bright-colored pieces of cloth do no filter into their remote regions as they did before the war. Aside from a few such isolated people there is not a man, woman, or child whose life has not in some way been influenced by the Great War. Many have sent their sons and brothers to fight, while all have been taxed more heavily than ever before, or have been forced to go without some of their accustomed luxuries and to pay high prices for the most common necessities. They have also been led to think new thoughts and to face public problems that never entered their heads before. A war in China, India, or South America could never have had any such result. Even the greatest conceivable war in North America could never have produced such a widespread disturbance.

The Great War has done all this because it centered in western Europe, the home of civilization. That region, far more than any other, holds in its hands the destinies of the whole inhabited world.

Why is Europe so important? That is the main question to be answered in this course. There are many answers, historical, racial, political, social, and geographical. In the pages that follow the geographical answer is considered. This involves a study of Europe as a whole—a consideration of its position, relief, climate, resources, transportation, commerce, races, and many other subjects embraced in Part I. In Part II the geographic facts relating to individual countries are discussed. In all three parts the method is the same, and each subject treated is to be considered as furnishing material for an understanding of the larger problem. As to each one we must ask: "How do geographic conditions influence this country? How do they cause it to differ from other countries?"

MAIN PHYSICAL FEATURES

The Position of Europe

IN WHAT way has the position of Europe played a part in causing the continent to be dominant in the world's affairs?

One answer to this question lies in the fact that western Europe is so located that it can easily come in contact with other parts of the world. No other region rivals western Europe in the ease with which it can communicate with a great number of people and with a great variety of countries. In order to see how true this is, work out the following problems:

(1) *Relation to the land hemisphere.*—In some standard atlas find a map showing the world divided into hemispheres containing the maximum amount of land and water respectively. Find the center of the land hemisphere. Record your conclusions as to the degree to which the lands and hence the inhabited parts of the world are accessible from western Europe as compared with other regions.

(2) *Distance of Europe from great centers of population.*—Test the conclusions reached above by measuring the distance from the largest city in each continent to the largest city in each of the other continents. Reckon the distance in miles by land and miles by water along the easiest route. Use a globe, and bear in mind that ships sail along "great circle" courses. Remember that transportation costs nearly ten times as much by land as by water but takes less than half as long. On this basis reckon the distance from place to place in units,

a unit being either 100 miles by land or 400 by water. Find the average distance of each city from the other five. Arrange the cities in order according to their accessibility, and write out your conclusions as to the relative advantages of the position of the various continents. How does this order compare with the volume of foreign commerce from each continent?

(3) *Position of Europe in respect to commercial and industrial activity.*—From the list of cities in the World Almanac or in some good geography determine how many cities of 200,000 population or more lie within a radius of 1000 miles of each of the six cities used above. This will give an approximate measure of the degree of commercial and industrial activity in each continent. Do the figures thus obtained increase or diminish your feeling as to the importance of the position of Europe? Why?

The Relief of Europe

Main problem: To determine in what respects and to what degree the relief of Europe is more or less advantageous than that of the other continents.

Minor problems: Determine the approximate area of the great European plain or lowland which begins at the foot of the Pyrenees Mountains, extends over into southeastern England and southern Scandinavia, and extends east through Germany and Russia.

Compare the area of this lowland with the area of equally fertile lowlands in other parts of the world.

Compare the approximate number of people in the lowland with the number in the main lowlands in each of the other continents, namely, one each in North America, South America, Africa, and Australia; and three in Asia.

Compare the obstacles to travel in the European lowland with those in the world's other great lowlands. The obstacles may take the form of mountains projecting into the lowland, great swampy areas, rivers so large that they cause devastating floods and are hard to cross, forests too dense to traverse, and deserts or dry areas where population is bound to be scanty and transportation correspondingly costly. Make a table showing the size and nature of the obstacles in each continent. Also make a table of the distance that one can travel in each lowland along the main line of movement without encountering any important topographic or climatic obstacle.

Study the direction of the main axis of the lowland and its relation

to the main lines of travel and to the main obstacles, and see how these compare with the conditions in the world's other great lowlands.

Main conclusions: Arrange the continents in the order of the favorability of their relief. Make a table expressing the advantages and disadvantages of each. Write out a statement of the reasons why the east and west trend of the main lowland of Europe is a great advantage.

The Climate of Europe

Europe owes its supremacy even more to its climate than to its position and relief. This is because no other continent contains so large a proportion of area where the climate is highly favorable to human activity and also to agriculture.

(1) In an atlas showing physical features or in any text book on climatology or on physical geography take the maps showing the isotherms in January and July. Lay a sheet of tracing paper over the January map, and trace the approximate location of the isotherms indicating a mean temperature of 32° and 45° (or 30° and 50° if 32° and 45° are not given) in each continent. (If such terms as "isotherms" are not understood a special exercise may be devoted to them.) Lightly shade the continental areas included between the lines. These shaded areas show the parts of the world where the winter temperature is near to that which is most favorable for mental activity.

(2) The most favorable temperature for physical activity is an average of from 60° to 70° . Accordingly, place the map that you have just made on the map showing the isotherms for July. Draw lines showing the 60° and 70° isotherm in each continent. Shade all the areas between these lines, but be sure to use a type of shading easily distinguished from that already employed. Draw heavy lines around the areas which have both kinds of shading. Remember that one kind of shading indicates that the winters are highly favorable for mental activity, while the other shows that the summers are highly favorable for physical activity. Both kinds of activity are needed if civilization is to reach the highest level. Hence, the areas within your solid line are the most favored parts of the world. Write a discussion of the degree to which Europe is favored compared with the other continents. Write a further discussion of the degree to which different countries of Europe are favored. What has all this to do with the degree of energy shown by each of the belligerents in the Great War?

(3) Changes of temperature from day to day as well as from season to season are highly advantageous. They not only promote physical health but are a great mental stimulus. Such changes arise largely

from "cyclonic" storms such as occur every week or two in most parts of the United States. On a map of storminess such as is found in Bartholomew's Meteorological Atlas determine the areas where storms are abundant. How do these compare with the areas of favorable temperature?

(4) If civilization is to advance, the climatic conditions must be favorable for agriculture as well as for human activity. Let us see how Europe stands in this respect. In order that agriculture may flourish in the temperate zone without the help of irrigation the temperature must average 60° or higher for at least 3 months; during those months there must be at least two inches of rain per month; and there must at no time be any long period when the temperature averages 60° or higher and there is less than two inches of rain. If monthly maps of rainfall and temperature are available, for example, in Bartholomew's Atlas of Meteorology, find out just what parts of Europe enjoy these conditions. In this respect how does Europe compare with the parts of North America in similar latitudes? If maps showing the monthly rainfall and temperature are not available, study the maps of crops in the Atlas of World Agriculture. Make a list of all the crops there shown and indicate in which continent the production is greatest. On this basis, what conclusion do you draw as to the agricultural possibilities of Europe? What relation have these possibilities to both the relief and the climate of Europe? Sum up your conclusions as to the degree to which Europe enjoys conditions that are highly favorable both for man's activity and for agriculture.

The Relation of Europe to the Sea

One of the important factors which has caused Europe to be the leading continent is its relation to the sea. In no other continent are there so many deep indentations which bring all parts within easy reach of oceanic communication. This is especially true of the west, and is another reason why western Europe is much more influential than eastern Europe. Another important factor is that the great indentations on the north and south sides of Europe—that is, the North and Baltic Seas on the one hand and the Mediterranean and Black Seas on the other—have their longest axes in an east and west direction parallel to the lines of greatest movement. Thus, land communication is supplemented by water communication as in no other continent. Also, the fact that the sea is so near to most parts of Europe tends to improve the climate, for the moisture of the sea can reach far inland.

(1) *Distance from the sea.*—In order to see how close most parts of Europe are to the ocean, take outline maps of Europe, North America, and Asia. On each one draw a line approximately parallel to the coast and at a distance of 300 miles from it. Shade the region within 300 miles of the coast and roughly estimate its area. This estimate may be made by placing over the map a transparent sheet of paper ruled in squares and then counting the squares. Sum up your conclusions as to the relative accessibility of Europe and of the other continents to the ocean. In the same way compare the different parts of Europe.

(2) *Inland cities and oceanic communication.*—Locate the ten largest inland cities of Europe and find their average distance from the sea. Do the same for the ten largest inland cities of North America and of Asia. Compare the three continents in this respect.

(3) *Direction of the waterways.*—Measure the distance which one can proceed eastward or northeastward with ocean steamers (a) from Gibraltar, (b) from the British Isles. How does this compare with the distance that ocean steamers can proceed westward in North America (a) from the mouth of the St. Lawrence River, (b) from the Straits of Florida. Make similar comparisons for the other continents so far as possible and sum up your results.

(4) *Relation of the sea to climate.*—In order to see how much influence the presence of the ocean and its location in respect to the prevailing westerly winds have upon the climate of Europe, make a table showing the rainfall on the seaward and inland sides of the following natural features of Europe: (For this purpose use any good map showing the total annual rainfall.)

- (a) The central part of the Scandinavian Peninsula.
- (b) The part of Great Britain from Wales to eastern England.
- (c) The great continental plain extending from France to eastern Russia.
- (d) The western and eastern sides of the mountains of western Spain.
- (e) The north and south slopes of the Alps.
- (f) The western and eastern sides of the Dinaric Alps east of the Adriatic Sea

Sum up your conclusions as to the value of deep arms of the sea in producing favorable climate. Point out the degree to which Europe is more favored than the other continents in this respect.

THE NATURAL REGIONS OF EUROPE

A. *The Meaning of Natural Regions.*

The preceding consideration of the position, relief, climate, and oceanic relations prepares the way for the division of Europe into natural regions. The term *natural region* means an area within which the total effect of the physical features is such that the general aspects of life, including man, animals, and plants, are similar. Since man is the most important living being the conditions of his life are the main criteria in determining the natural regions. In determining the natural regions of a continent it is necessary first to consider the regions into which the continent would be divided on the basis of each one of the main physical features already considered and then to sum up the conclusions and to form a new division of areas on the basis of a combination of the previous divisions. The following paragraphs show how this is done. Position and relation to the sea are considered together because essentially they lead to the same divisions. In each case outline maps of Europe should be used, and the natural divisions should be clearly marked.

(1) *Divisions on the basis of position.*

(a) Northwestern or Atlantic Region. This includes all the region within about 300 miles of the seacoast from southern France to the North Cape, including the Baltic Sea. It omits southern France.

(b) The Mediterranean Region. This includes the southern peninsulas from Spain to Greece and all the intervening area within about 150 miles of the coast.

(c) The Southeastern Region, including all the area within 300 miles of the Black or Caspian Seas.

(d) The Northeastern Region, including all the area within 300 miles of the Arctic Ocean, except in so far as part of this area is already included in the Atlantic Region.

(e) The Central Region. This comprises all the area not included within any of the preceding divisions. Notice that this region is almost entirely confined to eastern Europe.

(2) *Divisions on the basis of relief.*

On the basis of relief Europe seems to fall naturally into five regions:

(a) The northwestern highland, which includes northern Ireland, Scotland, all except the southern tip of Scandinavia, and part of Finland.

- (b) The great central plain, which extends from France and south-eastern England through Germany to Russia, where it expands to the Black Sea on the south and the Arctic Ocean on the north.
- (c) The central mountains, which include the Pyrenees, the Alps, and the Carpathians.
- (d) The plains of Hungary and Rumania, which lie south of part of the central mountains.
- (e) The southern peninsulas of Spain, Italy, and the Balkans.

In what respect do these divisions differ from those based on position and on relation to the sea? Which method of division is better?

(3) *Divisions on the basis of climate.*

On this basis it is necessary to consider how far the climate is favorable both to man and to agriculture.

(a) Northwestern Europe. This includes the region where the conditions are highly favorable for human activity as defined under "Climate of Europe" (p. 16), and where the summers are warm enough and long enough to be favorable for agriculture. It embraces France except for the southern portion, northern Italy, Switzerland, western Austria, Germany, a narrow fringe on the eastern shore of the Baltic, and the southern part of Scandinavia, together with Denmark, Holland, Belgium, England, and southern Scotland.

(b) Regions with summers too cold for agriculture. This includes areas where the climate is not excessively cold in winter but where there is relatively little contrast between summer and winter so that the summers are too cold for profitable agriculture. Most of Ireland and Scotland and the shores of Norway are of this type.

(c) Regions where the summers are warm enough for agriculture but the winters are so cold as to be benumbing to human activity. The coast of the two gulfs at the head of the Baltic Sea and the part of Russia extending from the Baltic Sea eastward belong to this division.

(d) Regions where the summers are too cold for agriculture and the winters are benumbing to human activity. This includes the highlands of Scandinavia and the district bordering the Arctic Ocean extending south for about 500 miles. It is almost uninhabited.

(e) Regions where the winters are favorable both to man and to agriculture but where the summers are too hot for man and too dry for agriculture. This includes most of Spain, a small part of southern France, the southern two-thirds of Italy, the Balkan Peninsula, and the part of Russia near the Caspian Sea.

(f) Regions where the summers are too warm and the winters too cold for man's best good but where agriculture is fairly flourishing. This includes most of Austria, Poland, Bulgaria, Rumania, and the southern part of Russia.

These divisions are somewhat complex. A little study, however, shows that to a considerable extent they agree with the divisions formed on the basis of position with relation to the sea. Without regard to the complexity of the divisions, sum up your conclusions as to which method of dividing the continent is more likely to give a true idea of the character and activities of the people.

The following pages describe the standard natural divisions into which Europe is divided. Other methods of dividing the continent may equally well be used. Those here given, however, are based on careful consideration of all the various geographic factors. They are designed to be few enough to be easily remembered and yet to be so numerous that each division shall be fairly homogeneous in the character and occupations of its people. As these divisions are studied compare them with those based on the position and oceanic relations, the relief, and the climate.

*B. The Description of the Natural Regions of Europe.**

Fortunately for Europe its natural geographic regions, unlike those of the United States, trend east and west rather than north and south. Its most fertile plain touches the Atlantic coast instead of being separated from it by a broad mountainous region such as the Appalachians or Rockies in the United States. Because of the openness of this plain to the sea Europe is more favored than the United States, both in climate and in transportation facilities. This advantage is offset by the fact that Europe, especially in the portion most favored by nature, is split into many political divisions, each with its own language and its own interests, which are often opposed to those of its neighbors.

The Northwestern Highland.

The Northwestern Highland of Europe includes most of the Scandinavian Peninsula, together with northern Scotland. In proportion to the population the number of people who get a living from the sea is greater in the Northwestern Highland of Europe than in almost any other part of the world. Those who do not follow the sea are usually

*Parts of this section are taken almost unchanged from a Teachers' Manual of Geography, published in 1918, by the Massachusetts Board of Education. That fact will explain the method of treatment.

engaged in taking care of sheep and cattle, although there are others who are lumbermen or miners. Without the four occupations of seafaring, cattle-raising, lumbering, and mining, most of the inhabitants of the Northwestern Highland would be unable to support themselves. The land is so rough and rugged and the weather so cloudy and cool that the farms are limited to small patches in especially favored valleys. Even there only hardy crops, like oats and barley, can be raised.

In order to get a living the people must turn either to the sea or to the mountains. It is easy to turn to the sea, for its waters come to the doors of nearly half the inhabitants. Not only have glaciers deepened many of the valleys so that the ocean water has entered them, but the coast has been submerged so that there are innumerable fiords and islands among which the fishermen's boats can be moored safely. Traveling inland from the coast one must begin to climb almost at once, for the level land is so limited in extent that there is scarcely room either for farms or cities. In many places the slopes, especially on the east side, are covered with dense forests that furnish lumber for houses and ships, and fuel for preparing high grades of steel from the iron ore which is one of the great resources of northern Sweden. Many of the slopes, especially those facing the west, are so constantly cool and cloudy that trees will not flourish, and the slopes are covered by thick grass which furnishes fine pasturage. The farmers depend on their animals even more than on their crops, and often have a summer home among the mountain pastures as well as a winter home by the sea.

In such a region internal commerce is almost lacking, and it does not pay to build railroads, especially since the rugged relief makes the work of construction very expensive. Because of their stimulating climate and good inheritance, however, the people are very energetic, and are extensively engaged in the carrying trade for other countries. Scotch sailors are found all over the world, and Glasgow is one of the greatest shipbuilding ports. Before the war, Norway in proportion to her population had more ships than any other country—twice as many as England, four times as many as Greece, five times as many as Holland, and from ten to fifteen times as many as the United States or Germany. In other ways, too, the people of the Highlands show great efficiency. Like the Swiss they are more and more causing their abundant glacial lakes and waterfalls, their rugged mountains, and their picturesque coasts to be accessible to tourists. Thus they gain for themselves some of the wealth produced in regions of greater natural resources.

The Scotch and Norwegians are noted for their thriftiness. This is due partly to the fact that the people are naturally alert in mind, and partly to the fact that a combination of geographical circumstances makes them active in body and prevents them from getting a living except through vigorous efforts.

- (1) How do conditions of relief, soil, temperature, rainfall, and the use of machinery influence farming in the Northwestern Highland and thus help to make the people thrifty?
- (2) How do grazing conditions help to make them thrifty?
- (3) Why is not grazing as profitable here as it is in Holland?
- (4) How has the fact that there is little or no manufacturing helped to make the people thrifty?
- (5) Why does the fishing industry tend to make the people thrifty?
- (6) How does the climate help to keep the people from falling to a low standard of living?

State your conclusion in the form of a summary of the effect of climate, relief, and position upon human activities.

The Western Lowland.

The significance of the Western Lowland of Europe, which includes England, France, Belgium, Netherlands, Germany, and Austria, may be judged by comparison with the United States. The North Atlantic Lowland of the United States is admirably located for commerce; the Appalachian Highland contains magnificent deposits of coal; the Lake Superior district boasts some of the world's richest deposits of iron ore; the great prairie plains are unsurpassed in agricultural possibilities; and all these regions enjoy a most stimulating climate. Suppose, however, that instead of being spread over a distance of 700 or 800 miles, and separated from one another by a broad highland, these advantages were concentrated within 100 or 200 miles, and were close to an open waterway, permitting the largest ships to penetrate far into the interior; then our country would have a region like the Western Lowland of Europe. Within the borders of the European lowland in England, France, Belgium, Germany, and Austria are some of the world's finest beds of coal. Close to the coal in four of these countries there are valuable deposits of iron ore, and the neighboring fertile plains produce fine crops. Add to all this the fact that most of the Western Lowland is less than 250 miles from the sea, and that numerous fine harbors and navigable rivers bring almost every part within easy reach

of ocean transportation. The combination of all these favorable conditions, together with a highly stimulating climate, causes this rather small area—only one-fifth as large as the United States—to have twice as many cities of over 100,000 people as has the United States or all the rest of Europe. In fact, one-third of all the world's cities of more than 100,000 people are packed into this comparatively small area, which comprises only a seventh of Europe and less than 1 per cent of the total land surface of the earth. This section does more than half of the world's manufacturing, and carries on more than half of its commerce. Nowhere else in the world can there be found so busy a region.

The reasons why the Western Lowland of Europe is the most important region of its size in the world.

All the conditions of position, relief, climate, and nearness to the sea which make Europe the most important of the continents are concentrated to an even greater degree in the Western Lowland. Remember that this lowland includes western and northern France but not the central mountains and the south; it includes most of England but not Wales, Scotland, and Ireland; it also includes Netherlands, Belgium, and Denmark; a narrow strip in southern Norway and the plain of southern Sweden, that is, the parts of these two countries where the majority of the inhabitants are found; practically all of Germany is included and the western part of Austria to a point a little east of Vienna; and finally the western fringe of Russia as far north as Petrograd. Consider the way in which almost all the conditions of progress exist here in close proximity.

(1) *Coal.*—Examine a map showing the distribution of coal in Europe. From a table of coal production by countries, such as is found on page 45, determine the approximate percentage of the world's total coal production and of the European production that comes from this Western Lowland or from its immediate borders, such as Wales and southern Scotland. Discuss this fact in its relation to manufactures and transportation.

(2) *Iron.*—Examine a map showing the distribution of iron mines in Europe. Also study a table showing the amount of pig iron produced in various countries. How does the Western Lowland stand in the production of iron ore and of pig iron? Explain the fact that it produces much more pig iron than would be possible with its own ores. Where do these other ores come from? To which countries do they come? Along what routes? Why does the cost of transportation not

seriously interfere with the production of pig iron? Explain why the ore comes to the coal instead of the coal going to the ore.

(3) *Crops*.—From the *Atlas of World Agriculture* find how the production of the following crops in the Western Lowland compares with the production in other countries: wheat, rye, potatoes, sugar, beets, oats, barley. See if you can find any other part of the world where there is an equally favorable combination of many kinds of abundant crops. (See also table, *The Food of Nations*, p. 38.)

(4) *Facilities for Navigation*.—In this respect the Western Lowland is preeminent. How large a part of it is more than 200 miles from the sea? Name eight of the most important rivers. Look up each one in the *encyclopedia* in order to see how far each is navigable. What do you conclude as to facilities for inland communication? What other parts of the world can rival the Western Lowland in this respect? Name fifteen good harbors along the coasts of the Lowland. Locate each one. Judging by the size of the cities on these harbors what do you conclude as to their excellence?

(5) *Large cities*.—Among the larger cities in the list in the *World Almanac* or in some standard geography pick out and locate 25 that belong to the Western Lowland. In all the rest of the world how many other cities are there that compare with these in size? Remember that the Western Lowland comprises only a small percentage of the land surface of the globe. Determine that percentage, and then draw conclusions as to the relative importance of this small area compared with areas in any other part of the world.

(6) *Excellent climate*.—How cold is the coldest part of this Lowland? How warm is the warmest part? How long are the summers in the northern and southern parts of the Lowland? The winters? How do these conditions compare with the ideal as described in a previous problems, page 16? Compare the rainfall at different seasons. How much rain is there in the wettest parts? The driest? How large a part of the Lowland has either too much or too little rain at certain seasons? What features of the climate stimulate people to work? Sum up your conclusions as to the degree to which the Western Lowland is favored above other regions.

The Eastern Plains.

The Eastern Plains comprise practically the whole of Russia. (This region is so nearly the same as Russia that it is described under that country. See Part II, "Russia.")

The Southeastern Basins.

The Southeastern Basins of Europe comprise the regions commonly known as the plains of Austria, Hungary, and Rumania. Their chief characteristic is that they are broad, flat-floored basins bounded for the most part by high mountains. Thus, they are cut off from the neighboring regions, but are accessible from several directions and, therefore, have not preserved such complete individuality as have the southern peninsulas of Spain and Italy, which are shut off by high mountains that have served as effective barriers for centuries.

In the plains themselves the land is very flat. Hence, the rivers wander over very wide flood plains and often form vast marshes which are impassable during the spring thaw and summer rains. So widespread are these marshes that in Hungary large areas are uninhabited, and in Rumania they form a barrier between Rumania on the north and Bulgaria on the south.

The rainfall is fairly abundant and comes more in summer than in any other season. It is apt to come spasmodically, however, and in the spring and fall there are sometimes droughts which seriously injure the crops. This does much to prevent these regions of eastern Europe from being as prosperous as those of the west. In addition to this, the temperature for many weeks in summer remains higher than is best for human health. Moreover, there is much monotony so that the climate lacks the stimulating quality which is so prominent farther west. The winters, too, are colder than in the same latitudes near the ocean.

Because of the difficulties of agriculture and the large amount of land too dry or too wet for crops, animal-raising occupies a prominent place in the Southeastern Basins. Grain, however, is the chief farm product. It is raised in such large quantities that there is an enormous surplus for export, and Rumania is one of the greatest wheat-exporting countries. The traveler comes away from the Southeastern Basins strongly impressed by the grain, cattle, and horses.

The surplus production of the Austrian and Hungarian basins is absorbed by the adjacent regions that are less favored in relief and soil. The surplus production of Rumania is sent to western Europe by way of the Black Sea and the Dardanelles.

Problems.—(1) Enumerate the barrier mountains that almost enclose the Southeastern Basins.

(2) Point out the routes by means of which these basins come in

contact with the outside world. What great cities have grown up in response to these routes?

(3) From a good relief map of these regions estimate carefully the area of flat land in each of the basins. What prairie states of our country, or combinations of them, approximate the areas of each of the basins?

(4) Enumerate the chief rivers and the larger tributaries that wander over the plains. Point out how they help and how they hinder the progress of their countries.

(5) From accounts in the encyclopedias and geographies select traits of the people that seem to be responses to the fact that the climate is more monotonous and less stimulating than farther west.

The Central Mountains.

The Central Mountains begin with the central plateau of France, culminate in the Alps of Switzerland, and extend eastward into the Austrian Alps and the Carpathians.

Switzerland as a problem.—As an example of how a portion of one of the natural regions may be treated the following discussion of Switzerland is here inserted.

Suppose that current events turn the attention of the world toward Switzerland. Let us assume, for example, that the question of Swiss fertilizers and of their exportation to Germany, along with other commodities, happens to attract the notice of the teacher or of some member of the class. Then the question arises, How can Switzerland get material for fertilizers? and someone reports that they are manufactured from the air. That fact furnishes an excellent entering wedge for a study of Switzerland as a whole. The teacher puts before the class the problem of why Switzerland is engaged in the fertilizer industry. From his general study of Europe the student will recall that Switzerland comprises the culminating part of the great central mountains of Europe. He understands that four-fifths of the country is so high, rugged, and cool that few people live there except in the pleasure resorts. The remaining one-fifth from Lake Geneva to Lake Constance comprises a narrow lowland of gentle relief and contains three-fourths of the people. With this background the student is ready to solve the problem of why Switzerland is one of the few countries where fertilizers are made from the air. The solution involves practically every phase of Swiss geography. The climate and the racial inheritance of the Swiss make them energetic and inventive. Their mountains, be-

cause of their height and glaciation, abound in streams which tumble into waterfalls. Therefore, the Swiss utilize the water power in great hydro-electric plants which at slight expense generate strong electric currents capable of taking nitrogen from the air and making it into fertilizer.

But why should the Swiss engage so prominently in this particular kind of manufacturing rather than in some other occupation? Could they not practice agriculture? The lowland where most of them live provides excellent farm land and is much more carefully tilled than a region like Iowa. Its small size and cool climate, however, limit the number of people who can gain a living from farming; hence, when the population became dense many of the people were obliged to look for new occupations. In a country like India where the people have less energy they become poor when their number increases too rapidly. The Swiss, however, have so much energy that they are not content with any such fate. Those who can not engage in agriculture are unable easily to turn to commerce, for Switzerland has no outlet to the sea. Moreover, the mountains on all except the German side of their lowland are difficult to cross, and the country is completely surrounded by foreign countries which impose certain tolls on goods brought across their borders. Nor is it easy for the Swiss to engage in general manufacturing because they lack metals and most raw materials except wood and hides. The conditions which hinder commerce make it unduly expensive to import great quantities of heavy materials like iron, or bulky materials like cotton in such quantities as are necessary for making ordinary grades of cloth. Therefore, the Swiss in order to be prosperous have found it necessary to devise special methods of getting a living. That is one reason why they have shown such ingenuity in utilizing their beautiful scenery. Probably more than any other people they endeavor to make their country pleasant and attractive for travelers and vacationists at all seasons of the year, and they receive rich returns for their efforts.

The Swiss turn to their own advantage other natural resources as effectively as they utilize the scenery. For instance, taking the wood which abounds everywhere they carve it into superior handmade toys which appear on Christmas trees all over the world. The toys can be made in winter when the people are not fully engaged on the farms or in taking care of tourists. The Swiss have also developed great skill in manufacturing such articles as watches, fine cloths, and delicate embroideries, which require relatively little fuel and raw material but

demand a large amount of skilled labor. In the absence of fuel the Swiss have shown exceptional ability in utilizing the streams that formerly ran to waste. Their railroads and trolley lines are largely run by electric power from the waterfalls. This has made it possible for summer tourists to be carried cheaply from one bit of fine scenery to another, with the result that they desire to remain in the country as long as possible. As soon as it was discovered that fertilizers can be made by taking nitrogen from the air the Swiss said, "Here is just the thing for us. Nitrogen is a raw material that costs nothing. Our water power provides cheap electrical energy; our fields and those of our neighbors in France and Germany need enormous amounts of fertilizers." Thus the manufacture of nitrogen fertilizers represents, as it were, the latest step in a process by which the clever, energetic Swiss have been finding out how to make a good living in spite of what appeared to be scanty resources.

Starting with some important or striking activity like this, it is possible to build up a regional picture. While this is being done the student should, as a matter of course, learn the names and locations of the chief cities where the manufacturing is carried on, of the mountains that act as barriers or supply majestic scenery, and of the rivers that furnish water power or have carved valleys where railway lines are located. In the same way the physical features, such as climate, relief, soil, and minerals, should be fixed in the student's mind, not by a sheer process of memory, but as steps in attaining an end. So, too, the vegetation and animal life in their relation to forests, agriculture, or raw materials should become integral parts of the picture. Finally, in such a study the student should consider the peculiar character of the people themselves, their relation to their neighbors, and many of their habits and customs.

The Southern Peninsulas.

The three peninsulas that project southward into the Mediterranean Sea are lands of dry summers and rainy winters. Because the skies are so clear for many months in the year we hear about the wonderful blue of the Mediterranean and the wonderful colors seen on the land. This kind of climate, wherever it is found, is called the subtropical, or Mediterranean, type. The people, however, would gladly give up some of their blue skies for the sake of good rains during the long, hot summers. They neither like the bad crops which are often the result of scarcity of rain nor the hard work that is needed in order to supply water by irrigation. In many cases they are unable to live on

scattered farms, as are the people of the Hungarian plain, but must have their houses close together near to a water supply which will not fail during the long drought. They enjoy this village life, however, for it is gay and social.

Because of the long summer drought great forests like those of the north can not grow, and their place is taken by small groves or patches of woods high on the mountains. The most familiar trees are the poplar, the oak, and the olive, together with many fruit trees, such as the apricot, the cherry, and, in the warmer parts, the orange and lemon. The chestnut, the almond and the Persian (English) walnut also yield valuable crops. Lumber is scarce, and the crowded villages often consist of clusters of houses built of stone or adobe covered with plaster.

In these southern peninsulas there is not much manufacturing. This is partly because there is almost no coal and water power is uncertain, for during the long, hot summers the streams diminish greatly in volume and some dry up.

Equally important is the fact that the monotony of the summer climate causes the people to lack the energy which is characteristic of the people of the Western Lowland. Commerce also suffers, although it is greatly favored by the submerged shores which furnish excellent harbors in many parts of the peninsulas. The interior in many localities is shut off from the coast by mountains which are not easy to cross. The lower slopes of the mountains are clothed with vineyards or with groves of the olive or cork oak. Their upper slopes furnish pasture to thousands of sheep and goats herded by ragged boys who play shrill tunes on little pan pipes. In most parts of the three peninsulas it is almost impossible to get far away from the mountains.

Main problem.—Why are the people of the Southern Peninsulas generally poorer than those of the United States?

Minor problems.—1. How does the distribution of rainfall through the year help to keep the people in poverty?

2. What conditions of the climate tend to make the people work slowly and hence to be poor?

3. How does the relief of the country help or hinder in getting a living?

4. What important mineral resources are lacking? Why are minerals not brought from elsewhere?

5. Does the coast line tend to help the people out of their poverty or keep them in it? Explain.

6. Would more manufacturing improve the condition of the inhabitants? How? Why do they not manufacture more?

7. Does the beautiful scenery of the peninsulas tend to improve the condition of the people? How?

Conclusion.—(To be stated in the form of a brief summary of the results of the minor problems.)

PEOPLES AND COUNTRIES.

1. *The relation of physical features to distribution of races.*

No detailed study of the races of Europe is practical in a short course in geography. It is, however, desirable to point out and to discuss briefly three groups of the European peoples: (1) those that inhabit Mediterranean countries; these are often called the Mediterranean peoples, and for the most part speak languages derived from the Latin; (2) those that inhabit the great eastern plain or lands adjacent thereto, and speak Slavic languages; (3) those that inhabit the northwest of Europe, lands touching or near to the North Sea; these people speak Teutonic or closely related languages and are often called Nordics. There are also remnants of still earlier peoples—the Celts—who have been pushed to the very western extremities of the continent, and are found in Brittany, Wales, Ireland, and the Highlands of Scotland.

Note that the three principal groups of peoples are distributed roughly according to the natural regions: (1) The Mediterranean or Latin peoples live chiefly in the Southern Peninsulas. Their territory is bounded on the north by the Central Mountains, but where the mountains break down in France the "Latins" have pressed over into the Western Lowland. (2) The great Eastern Lowland is inhabited largely by Slavs. (3) The Western Lowland is the main home of the Nordics. (4) These energetic people have pressed into the Northwestern Highland, but that is still the home of the Celtic people—the ones who have been forced out of the better parts of Europe. (5) Finally, the Southeastern Plains are a great meeting-ground of races—some Nordics in Austria, some Latins among the Rumanians, many Slavs, especially in the mountainous border regions, and the Magyars, an Asiatic race, in the center.

The principal Mediterranean peoples of Europe speak related languages and are mainly Roman Catholic in religion. The Slavic peoples are mostly followers of the Greek-Catholic religion, while the Nordic peoples are mainly, though not wholly, Protestants.

France is not only open both to the Mediterranean and the Teutonic influences but in its rough western peninsula, which might be called part of the Northwestern Highland, still shows the effect of Celtic influence. No other country in Europe is open to so great a variety of influences.

There is unquestionably a close relationship between the fact that Europe is much cut up physically by mountains and arms of the sea, and the fact that it is highly diverse in its races and languages. Where many clear natural boundaries exist the inhabitants are likely to remain distinct in habits and speech. The great plain of Russia with its comparative uniformity of race, speech, and habits presents a strong contrast to the rest of Europe in this respect.

Problem.—Compare a political map of Europe before the war with a map of languages, such as is given in Dominian's "Frontiers of Language and Nationality in Europe." Make a detailed statement as to the places where political and linguistic frontiers disagree and as to the part played by these places in the war. (See also problem on "Boundaries," page 34.)

2. *The relation of physical features to political divisions.*

(1) To what extent have the peninsulas of Europe given rise to different nations? Have Spain and Portugal always been separate? Are their similarities or their differences more noticeable (language, religion, ideals, etc.)?

(2) Apply the same questions to Norway and Sweden.

(3) Is it probable that Denmark would have been absorbed into some other nation if it had not been so well defined by natural boundaries?

(4) Recall that the island of Britain formerly contained three distinct countries—England, Scotland, and Wales. Recall also that the English crown had important possessions across the channel in France. Discuss the relation of geographical or natural features to the union of Britain under one rule, and to the loss of the provinces in France. Ireland is much less perfectly absorbed into the United Kingdom than is Wales or Scotland, and remains more distinctive in race and religion. Discuss the extent to which these facts are connected with Ireland's complete physical separation from Britain.

(5) With the exception of Britain (in modern times) almost every country of Europe has had to fight foreign enemies on its own soil, most of them many times; why has Britain been the exception? Point out the beneficial results of this upon the upbuilding of British indus-

tries. Recall from history how often the other countries of north-western Europe have been overrun by armies; in this respect contrast Britain with Belgium and northern France in the present war.

Practically every European country engaged in the war except Britain expects its boundaries to be changed as the result of the war. Britain, alone, of the European nations most interested in the war, regards her boundaries as satisfactory. Explain why it is that political boundaries at variance with natural boundaries are usually unsatisfactory to one nation or the other, while natural boundaries are usually acceptable. Give illustrations.

(6) Poland was once one of the leading nations of Europe, but it was later partitioned among Russia, Prussia, and Austria. Show why the physical features of that part of Europe make it difficult to maintain an independent nation there. What is meant by a "buffer state" and why is the lot of such a state precarious? Consider the history of Belgium.

(7) Show why Switzerland, though it touches Italy, France, Germany, and Austria, does not fear for its territorial integrity, while Holland, Denmark, and Belgium are always in danger.

(8) A half a century ago, the present Italy consisted of several independent states. Why was it practically inevitable that they should be joined into a "United Italy"? The northeastern boundary of Italy does not coincide with any natural line of demarcation; what connection had this with Italy's break with Austria in the present war?

(9) Many people consider that, unless Germany's power is completely broken, she will absorb a large part of European Russia; show why, in consideration of topography, this seems likely. How can it be prevented? Give reasons why it should or should not be prevented.

(10) Austria is the most disunited nation of Europe. Its disintegration has seemed imminent for some time. Study its physical features, and decide to what extent they make for disunion. The Hungarians and the Bohemians are ardently patriotic in respect to their own lands but not with respect to the Dual Monarchy itself (Austria-Hungary). Can this be explained in the light of physical features?

(11) Study the physical map of the Balkan Peninsula and show how its topography makes for disunion and conflicting interests.

(12) North Germany is a plain and is completely dominated by one state—Prussia; south Germany is mountainous and is made of several distinct states (e. g. the kingdoms of Saxony and Bavaria, and the Grand Duchy of Baden). Is there any sign of causal connection here?

Suggestions.—After a thorough class discussion of the foregoing problems, it is suggested that each student combine his conclusions and deductions into a theme, "The Relation of Europe's Physical Features to Its Political Divisions." As a help in doing this, work out the problems on boundaries given in the following section:

3. *The effect of boundaries on international relations.*

- (1) Relation of boundaries to physical features.
 - (a) Make a table showing for each country of Europe the approximate percentage of its boundaries consisting of each of the following physical features:
 - (a) Oceans or seas.
 - (b) High or impassable mountains.
 - (c) Deserts due either to aridity or low temperature.
 - (d) Rivers too broad to be easily bridged, or swamp lands.
 - (e) Highlands which are relatively accessible and are inhabited.
 - (f) Lowlands or plains.
 - (b) Arrange the various countries in order according to the degree to which their physical boundaries genuinely separate them from their neighbors.

How do the two countries whose neutrality was guaranteed before the Great War compare with one another and with the other countries in this respect?
- (2) Relation of boundaries to races.
 - (a) Make a table showing the extent to which the boundaries of each of the European countries agree with the boundaries between races. Arrange the table under the following headings:
 - (1) Name of country.
 - (2) Percentage of the boundary along which the races of one or the other of the adjacent countries extend over into the next country to any appreciable extent.
 - (3) Character of the boundary in the sections where the same race lives to an appreciable extent on both sides.
 - (b) Arrange the countries in a consecutive list showing your opinion as to the degree to which the boundaries agree with the boundaries that would most tend to promote peace. Pay special attention to the belligerents in the Great War. How far does the condition of the boun-

daries afford an explanation of the readiness with which each was drawn into the war?

(4) Contrast the political aspects of the boundaries of Europe with their commercial aspect. For example, compare the volume of trade between France and Spain with the volume between France and Germany, and between France and Italy. Express the volume of trade in percentages of the total for each country. In the same way compare the trade between Germany and the Netherlands with that between Germany and Switzerland, and ascertain what physical features cause the difference. Make a special comparison of the trade of Switzerland with its four great neighbors, and compare this with the nature of the country which separates the Swiss from each of the other nations.

OCCUPATIONS AND INDUSTRIES.

Agriculture in Europe.

Introduction.

This problem and several others illustrate a method which may be used for many subjects. The method is to select some part of Europe as ideal or typical in some special respect. This place is used as the center around which the study of the whole continent may be grouped. The first step is to go to various reference books and find out the facts suggested under the headings given below. These facts should be recorded in a notebook and, so far as possible, should be put in the form of tables or of brief, clear descriptions. After the main facts have been determined, the conclusions to which they lead should be stated. When the central or typical region has thus been studied the students may undertake a similar study of surrounding regions, or the study may be postponed until the countries are taken individually. Whichever method is followed the student should pay special attention to the changes which occur as one goes away from the typical region. For example, as one proceeds north a change of one kind will be found, while east or south the change may be quite different. Each part of Europe, so far as possible, should be studied in approximately the same way, so that when conclusions are drawn they may include a comparison of the typical country with those that lie around it or at a distance from it. In this connection, the tables, "The Food

of Nations," on page 38, and "Mineral Production in Europe," on page 45, will be found useful.

A. FRENCH AGRICULTURE AS A TYPE.

France may be regarded as the ideal agricultural country of Europe. The reasons for considering it ideal are as follows:

1. Its great variety of products.
2. The relatively intensive quality of its agriculture.
3. Its capacity to support animals.
4. Its capacity to support a large population in addition to the farmers.
5. Its ability to bring prosperity to the farmer.

In order to find how true these five propositions actually are, the student should study the matter statistically. The way in which this should be done is suggested below:

(1) From the encyclopedia, Statesman's Yearbook, or the *Atlas of the World Agriculture*, make a list of the five chief agricultural products of France and ascertain what percentage of the total is represented by each of the five. The full significance of these figures will not appear until other countries are studied; then it will be seen that France does not depend nearly so much upon any one product as do many of the other countries.

(2) Find the yield per acre and the yield per capita of the five chief agricultural products. Compare these with the yield per capita and the yield per acre of the same crops in the United States. This will bring out the intensive quality of French agriculture. The importance of this will appear when the other European countries are studied in the same way. Consult the table of production on page 38.

(3) List the four chief animals, the percentage which each animal forms of the total, and the number of each animal per capita of the human population. Compare this with similar figures for the United States.

(4) Ascertain the proportion of the French population engaged in agriculture compared with the number in the four other chief occupations, such as manufacturing, transportation, commerce, and mining.

B. PHYSICAL CONDITIONS OF FRENCH AGRICULTURE.

Having found what the conditions of French agriculture are, the next step is to determine their causes.

1. *Climate*.—Study the seasonal rainfall and temperature, the

length of the season free from frost, the number of months with an average temperature of 60° or higher, the rainfall during these months, the extremes of temperature, etc. Make tables or record the observations on maps as far as possible. Compare these tables with similar tables for your own home.

2. *Soil*.—Detailed facts as to soil can not easily be procured, but any encyclopedia or good general description of the country will give general indications as to the nature of the soil.

3. *Relation to markets*.—In the *Atlas of World Agriculture* locate the areas where the various agricultural products are found in greatest abundance. Study the relation of these to the areas of densest population and to the manufacturing and commercial centers, which are the great markets. Study the relief and the railroads in order to determine whether it is easy to transport the agricultural products to the markets.

C. THE FRENCH PEASANTS.

Having studied the actual conditions of French agriculture and the causes of its prosperity, the next step is to know what effect these conditions have upon the peasants. This study will be less specific than that which has preceded but can be made definite by considering the following points and setting down results for comparison with similar facts with regard to people of other regions: Style of houses, dress, transportation, household customs, education, religion, amusements, etc. Get the facts from the encyclopedia, books of travel, personal experience, etc.

D. AGRICULTURE OUTSIDE OF FRANCE.

After agriculture in France has been studied as the type, French agriculture should be compared with that of other parts of Europe. The outline given above for France may be used. In order to bring out the geographical relationships, it is a good plan to work outward from France in various directions. When the facts as to agriculture in any other part of Europe have been ascertained, they will have much more significance if compared with similar conditions in the type country. Pay special attention to the differences in climate, soil, and relation to markets, which are the root of the differences in the actual conditions of agriculture.

For this part of the subject the following geographical outline has been arranged in such a way that there is a gradual change from the

THE FOOD OF NATIONS

World Crop Comparisons for the Three-Year Period, 1911-13.*

^a Data for 1910, 1912, 1913 ^e Data for 1911, 1912
^b Data for 1910, 1913, 1915 ^f Data for 1911, 1913
^c Data for 1909, 1914, 1915 ^g Data for 1910, 1911, 1912

b Data for 1908

1912

1 Buffaloes j Including Rice

30

From "The World's Food Supply" by J. Russell Smith.

conditions in France to those in the various more extreme parts of Europe:

1. *England, Ireland, and Scotland*.—Contrast the potatoes and pigs of Ireland or the oats and sheep of Scotland with the varied and well-balanced products of France. Tie up these conditions with the rainfall, temperature, topography, location of markets, etc. Study emigration from both countries in relation to agriculture and rainfall; effect on character of peasants; absentee landlords; Scotch shooting preserves, etc. Discuss the ways in which England is intermediate between France and Ireland or Scotland.

2. *Belgium, the Netherlands, Denmark, and Scandinavia*.—Note the increase in the importance of animals—dairying in Holland and Denmark, sheep and cattle in Norway, and reindeer in Lapland. Study the relation of this increase to temperature, rainfall, grasslands, etc., and its effect on mode of life, education, cleanliness, and other habits.

3. *Northern Germany, western Russia, eastern Russia, and Siberia*.—Note the increase in root crops, potatoes, rye, etc.; gradual decline in activity and progressiveness of peasants; greater concentration in villages.

4. *Southern Germany, Austria, Rumania, Bulgaria or Serbia, Turkey, and Greece*.—Note that the change in this direction is slower than in any other. Yet there is a most striking contrast between the agriculture of northern France with its varied crops and animals and its thrifty peasants, and Turkish or Greek agriculture with its sparse and unfertilized fields of wheat and barley, its sheep and buffaloes, and its dull, careless peasants living in adobe houses. Make a careful study of dry summers and their effect.

5. *North Italy and Sicily*.—Here irrigation and its effects form the dominant note. Study Sicily in contrast with the Po Valley and note the striking contrast.

6. *Spain*.—Note that here, as in all the outlying and less prosperous countries, the tables for crops and animals show an increasing reliance upon animals, an increasing specialization upon a few crops, and a decline in the general prosperity and enlightenment of the peasants.

Forestry in Europe.

General relations.

The distribution of the principal forest areas of Europe is a response to various geographic and nongeographic influences. Foremost among

these influences are climate, topography, soil, and artificial preservation.

To appreciate the influence of climate on forest production, one should be able to contrast the luxuriant forest growths of cool, moist northwestern Europe with the comparatively treeless plains of south Russia or with the scattered forests of the Mediterranean countries.

At the time of the Roman penetration into northwestern Europe, that region was mainly forested. The forests slowly disappeared as agriculture claimed the more suitable areas, until the districts now in forest are principally as follows:

- (1) Regions having a climate too cool for agriculture.
- (2) Regions too rough or steep to be readily tilled.
- (3) Regions where the soil is too poor to yield profitable returns under the plow.
- (4) Game preserves or other areas kept as parks by the landed aristocracy.
- (5) Regions where agriculture is profitable, but where tracts of forest are preserved for the sake of a timber supply.

With the help of the following statements and suggestions and with a map of the vegetation of Europe before you, prepare a sketch map showing where each of the above types is chiefly located.

Game preserves and parks are particularly numerous in Great Britain and Germany. France and especially Germany are notable for the high development of the art of forestry and for their artificial timber preserves. On the sandy plains of northern Germany and in portions of Belgium, forests are abundant because of the poverty of the soil. The isolated mountain ridges of south Germany, the concentric ridges of eastern France, and above all the higher mountains of south and central Europe contain the principal forest regions of central Europe. The northern half of Russia and northern Scandinavia contain by far the largest forests of the continent.

The Forests of Sweden.

Although the forestry of Sweden differs in many ways from that of the rest of Europe, Sweden may be considered the typical forest country of Europe. North of the 60th parallel the slopes of the Scandinavian Highlands are composed of rocks which yield comparatively poor soils. The region is also, for the most part, beyond the climatic range of most agricultural crops. In this region, which comprises more than half of the country, are found vast forests of fir and pine covering all but the highest summits.

Numerous parallel streams falling into the Gulf of Bothnia furnish the necessary transportation for the logs and timber products. Sweden has more than a thousand sawmills, many of which are along the coast and most of which are run by water power developed in these same streams. The forest lands which cover more than half the area of the country are both privately and publicly owned. The forest industry is carried on under government supervision and by methods of scientific conservation. The forest products of the country reflect both the abundance of timber and the relative abundance of labor. Indicative of the former are such products as railway ties, mine timbers, and crude lumber. Reflecting the abundance of labor, we have exports of such manufactured wood products as paper pulp and matches. The total value of exported timber, pulp, and other forest products in 1915 was approximately \$100,000,000. This large figure ranks forest products first in Sweden's list of exports and makes Sweden the principal exporter of forest products in Europe.

Prepare similar descriptions of forestry in Russia and in Germany. Ascertain the effect of the war in diminishing the forest reserves of central Europe.

Mineral Resources of Europe.

Resources of individual countries. (See table, page 45.)

England.

Compared with world production, what minerals does England produce in appreciable quantity?

What are the principal minerals and where are the deposits located with reference to geographical position and transportation routes?

What mineral does England produce in greater quantity than any other European country, and where are the deposits located?

Of what minerals has England enough to export, and what European countries need them?

What is the importance of England's mineral industries as compared with her other industries?

What minerals does England need to import, and from what countries, not necessarily European, may she obtain them?

Spain.

What minerals are produced in large amounts in the Spanish Peninsula?

Compared with world production and with production in other European countries, in what minerals does Spain excel?

What are the principal minerals, and where are they located geographically and with reference to transportation routes?

How does the mineral industry of Spain compare in importance with other industries?

What is the influence of water supply on mining and other industries? What controls the water supply?

What are the principal mineral exports, and how do they compare with imports?

What is the present importance of the pyrite industry?

France.

What are the principal mineral deposits, and where are they located with reference to transportation routes?

Judged by relative production, how does France compare with Germany and with Great Britain in resources of coal and iron?

How is the location of the coal and iron deposits related to the seat of the steel industry, and what bearing has such relationship upon the cost of production of steel? (See encyclopedia for location of steel industry.)

What bearing has the location of the coal and iron deposits upon the international relations between France and Germany? (See encyclopedia article on Franco-Prussian War.)

What is the relative position of the mineral industry in France as compared with other industries?

What minerals has France for export?

What minerals must she import, and from what European countries may she obtain them?

Germany.

Note the mineral production of Germany in comparison with world production. In what minerals is she strong; in what weak?

Study the distribution of the coal and iron deposits, distinguishing between brown coal and coking coal. How are these deposits related to transportation routes and to the centers of the steel industry?

Compare relative distances between coal and iron deposits in Germany and in France and the location of the steel industry in those countries with similar relations in the United States.

Compare the iron and coal production of Germany with that of Great Britain.

What effect has this production on the relative importance of the steel industry in the two countries?

In what mineral is Germany preeminent among countries of the world? Where are the deposits located geographically and with reference to transportation facilities?

How has the location of mineral deposits affected Germany's military activities in the present war; in previous wars? (See encyclopedia articles on the War of the Austrian Succession, Franco-Prussian War.)

How does Germany's copper production compare with that of the world; what country would normally supply its needs?

Note Germany's production of manganese ore, essential for steel manufacture. What European countries furnish the needed supply, and what is the best transportation route?

What is Germany's natural source for oil?

How does Germany's mineral industry compare in importance with agriculture and other industries?

The Netherlands and Belgium.

What are the principal minerals produced in the Netherlands and in Belgium; how are they located geographically and with reference to means of transportation?

How are these deposits located with reference to similar deposits of France and Germany?

How does Belgium's mineral industry compare with her agriculture and other industries?

What minerals does Belgium import?

Note: Belgium's zinc and iron-smelting industries furnish an example of the persistence and development of an industry through favorable conditions of location or transportation after the original cause of its establishment has become largely inoperative.

Austria and Hungary.

What are the principal minerals, compared with world production? Where are the deposits located geographically and with reference to transportation facilities?

In what mineral do Austria and Hungary excel, and where is it located?

How does the mineral industry compare in importance with agriculture and other industries?

What minerals may be exported; what imported?

What countries are likely to be the sources of the mineral imports?

Italy.

Where are Italy's coal and iron deposits located? Compare Italy's production of coal and iron with that of France, Germany, and England.

What country would normally supply Italy's needs in respect to these minerals?

Of what minerals is Italy an important producer? Where are the deposits located, and how are they related to transportation routes?

How does Italy's mineral industry compare in importance with other industries?

What minerals does Italy export; what import?

Balkan States.

What is the relative importance of Greece, Rumania, and Servia in mineral production compared with world production?

What are the principal minerals of each country, and where are the deposits located geographically and with respect to transportation facilities?

What is the relative importance of the mineral industry in these countries as compared with other industries?

What bearing have the mineral deposits of these countries upon military activity in the present war?

Turkey.

Compare the mineral production of Turkey with that of other European countries; what are the principal mineral products, and where are the deposits located?

The mineral resources of Asia Minor are said to be great. What factors tend to prevent their exploitation and development? (See encyclopedia.)

Scandinavia.

In proportion to world production what are the most important mineral products of Norway and Sweden?

Where are these deposits located geographically and with respect to transportation facilities?

Is Scandinavia's fuel supply sufficient; where is it located?

What is the relative importance of the mineral industry compared with other industries?

What minerals are exported; what imported?

What countries receive most of the mineral exports and supply the imports?

MINERAL PRODUCTION OF EUROPE IN 1913
(Compiled by the United States Geological Survey)

Mineral	World	United Kingdom	France	Germany	Austria and Hungary	Russia	Belgium	Italy	Norway	Sweden	Spain	Portugal	The Netherlands	Switzerland	Romania	Servia	Greece	Turkey
Coal.....	1,478,000,000	321,922,130	45,108,544	305,714,664	60,575,201	35,500,674	25,196,869	772,802	.....	401,199	4,731,647	.....	2,064,908	.....	.....	.....	.....	.....
Petroleum (Oil).....	1,384,667,450	3,988,400	294,000	294,000	b95,700	7,818,130	62,834,256	.....	b47,256	.....	.....	.....	.....	.....	13,654,768	.....	.....	.....
Petroleum (OilShale).....	3,674,000	174,006,216	15,997,328	21,572,825	35,373,413	5,018,100	8,362,746	148,000	583,618	536,080	7,357,845	9,706,366	48,407	.....	.....	.....	305,195	847
Iron Ore.....	2,312,372	174,006,216	17,633	7,610	a200	40,698	1,289,310	27,000	41,596	3,938	21,254	21,254	.....	.....	.....	.....	7,623	.....
Iron (Manganese Ore).....	199,138	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chromic Iron.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nickel.....	32,016	204	300	150	75	17	.....	.....	.....	637	.....	179	1,250	6	.....	7 055	16,900	9,570
Tungsten.....	8,926	244	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,600	14,300
Molybdenum.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,300
Copper.....	1,099,386	331	21,400	10,978	26,430	4,519	37,268	1,100	1,764	9,700	1,102	60,296	187,000	.....	.....	.....	.....	.....
Lead.....	1,270,458	21,400	16,082	8,775	85,564	21,560	1,100	26,900	2,790	2,790	24,182	66,391	.....	.....	.....	.....	.....	.....
Zinc.....	1,093,635	6,775	16,082	264,635	8,162	12,200	.....	62,145	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Platinum.....	*268,108	417,900	d2,127,400	415,600	d2,179,300	c250,000	.....	417,200	.....	417,600	.....	42,300	.....	.....	428,000	.....	.....	.....
Gold.....	d454,942,211	e128,643	e128,643	620,766	e4,984,677	e2,104,107	.....	.....	.....	423,885	e247,988	.....	443,737	.....	.....	.....	.....	.....
Silver.....	e223,907,843	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	803,750	1,50,133	.....
Phosphate.....	7,000,000	13,183,000	344,300	13,183,000	224,332	141,456	143,260	16,500	223,300	.....	.....	4,400	.....	.....	.....	.....	.....	.....
Polish.....	6,570,000	12,798	343,019	343,726	.....	.....	.....	296	349,702	511,098	37,832	3,949,169	10,755	.....	50,917	142,059	.....	.....
Sulphur.....	813,894	.....	.....	.....	.....	.....	.....	.....	.....	385,261	.....	.....	.....	.....	.....	.....	.....	.....
Mercury.....	e117,473	6,055	304,407	.....	.....	e28,720	small amt.	.....	.....	e29,513	6,843	.....	.....	.....	36,618	.....	.....	.....
Bauxite.....	145,380	5,920	6,010	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tin.....	26,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Antimony.....	139,269	54,501	1,194	13,263	440,000	2,200,000	940,500	2,420,000	.....	12,282	.....	97	1,650	73,500	.....	106,200	.....	.....
Graphite.....	63,450	.....	1,211,000	1,211,000	.....	.....	.....	.....	.....	577,500	.....	66,000	140,000	.....	31,900	.....	.....	.....
Magnesite.....	23,531,000	2,420,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Salt.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* Long tons b Barrels c Troy ounces d Dollars e Flasks

All other items are short tons

Russia.

In what mineral products does Russia lead the world?

Where are these deposits located, and how are they related to means of transportation?

In what minerals does Russia excel other European countries?

Where are these deposits located, and how are they related to means of transportation?

What bearing have these deposits upon military activity in the present war?

What is the relative importance of the mineral industry to agriculture and other industries?

What influences tend to oppose the development of Russian mineral resources?

European Mineral Localities.

The principal mineral localities in European countries are as follows (the chief locality is shown by *italics*):

United Kingdom: coal—*Newcastle*, Glasgow, Cardiff: iron—*Cleveland*, Lincolnshire, Northamptonshire, Cumberland, Lancashire; tungsten—Cornwall; bauxite—Antrim; tin—Cornwall; salt—near Liverpool.

France: coal—*Valenciennes*; petroleum—Aumance (Allier), *Autun*; iron—*French Lorraine*; tungsten—Limousin-Auvergne; lead and zinc—Dept. of Gard; gold—*La Lucette*; phosphate—near Arras; pyrite—*Sain Bel* (Lyon); bauxite—Provence; antimony—*La Lucette*; graphite—Hautes-Alpes; salt—Meurthe et Moselle.

Germany: coal—*Ruhr*, Lower Lausitz, Lower Rhine, Thuringia, Upper Silesia, Saar; petroleum—Alsace, Bavaria and Hanover; iron—*German Lorraine*, Luxemburg, Siegerland, Nassau-Upper Hesse; nickel—Frankenstein; tungsten—Erzgebirge; molybdenum—Sadisdorf; copper—Mansfeld; lead and zinc—*Upper Silesia*, Rhine, Erzgebirge, Hartz; silver—Mansfeld; potash—*Strassfurt*, Alsace; pyrite—Meggen (Westphalia); graphite—Passau; salt—*Prussia*.

Austria-Hungary: coal—*Bohemia* (brown coal), Upper Silesia (coking coal); petroleum—*Galicia*, Vienna; iron—Steiermark; tungsten—Erzgebirge; molybdenum—Miess; copper, lead, zinc—*Miess*; gold—*Zalatna* district; silver—Bohemia; mercury—Idria; graphite—*Bohemia*, Styria, Moravia, et al.; magnesite—*Veitsch* (Steiermark); salt—Galicia.

Russia: coal—*Donetz*, Moscow; petroleum—Baku, Grosny, Maikop; iron—Krivoi-Rog (iron ore), Nikopol, *Tchiature*, Kutais (manganese

ore), Urals (chromic iron); copper—Urals, Kedabek; platinum, gold—Urals (and Siberia); phosphate—Moscow; pyrite—Ufa; mercury—Nikitovka (Donetz Basin); salt—Ekaterinoslaf.

Belgium: coal—Mons, Charleroi, et al.

Italy: petroleum—Parma and Piacenza; iron—Piedmont, Elba; copper—*Tuscany*; lead, zinc—Sardinia; gold—Piedmont; silver—Sardinia; pyrite—*Tuscany*; sulphur—*Sicily*; mercury—Mount Amiata; bauxite—Lecce; graphite—Pinerolo; salt—*Sicily, Calabria*.

Norway: nickel—Evje; copper—Röros, Foldalen, et al.; silver—Kongsberg; pyrite—Trondhjem.

Sweden: coal—Malmöhus and Kristiansted; iron—*Norbotten* (*Kiruna*, et al.), Grangesberg; copper, lead, zinc—Ammeberg (Götland); pyrite—Falun.

Spain: coal—Oviedo; iron—*Vizcaya*; tungsten—Pontevedra; molybdenum—Granada.

Spain and Portugal: copper—Huelva; lead—*Linares-La-Carolina*, Murcia; silver—Linares-La-Carolina; potash—Cardona; pyrite—Huelva; mercury—Almaden; salt—*Cadiz*, Alicante.

The Netherlands: coal—Heerlen and Kerkrade.

Switzerland: salt—*Rhone Valley*.

Rumania: oil—*Prahova* (Wallachia); salt—Vâlcea, Bacau.

Servia: copper—Bor (Nish); pyrite—Majdan Pek.

Greece: iron—Thessaly; lead, zinc—Laurium; pyrite—Saloniki; magnesite—Euboea; salt—Laurium.

Turkey: copper—Arghana Maden; lead—Aleppo, Kossova, Kona; zinc—Adana; gold—Thessaly and Macedonia; silver, lead—Aleppo, Kossova.

The war uses of these minerals and the relative independence of the United States, so far as minerals are concerned, are discussed in Chapter VIII of Military Geology and Topography, listed among the reference books.

Manufacturing in Europe.

Europe is particularly fitted to be a manufacturing country in each of the following respects: (1) climate, (2) agricultural possibilities at home, (3) topography or relief, (4) mineral resources, and (5) the possibility of bringing food and raw materials from abroad. In practically every one of these it is more favored than any of the other continents. In order to see how far this is true, work out the following problems.

A. Determine the extent to which the different countries of Europe

are engaged in manufacturing industries, and compare this with the figures for other countries. From the encyclopedia or other reference book make a table showing the approximate value per capita of the exports of manufactured goods from ten or more countries of Europe, and from the United States, Canada, Mexico, Venezuela, Argentina, Brazil, Japan, China, Siam, India, and Persia. Exports are used rather than the actual total of manufactured goods because statistics of exports are readily available, while those of total manufactures are not kept in most countries. The per capita basis is necessary in order that the degree of manufacturing in small countries may be fairly compared with that in large.

On an outline map of the world place in their proper locations the per capita figures for each of the twenty countries in your table. Shade the five having the largest figures. Use another and lighter kind of shading for the next five, and a still lighter kind for the third five.

B. You now have before you a map showing the approximate distribution of manufacturing industries. The next step is to compare this distribution with the five geographical conditions mentioned at the beginning of this exercise. Turn back to the problem on the climate of Europe, page 16. On the map prepared in that exercise how do the areas where the climate is most favorable to human health and activity compare with the areas where manufacturing is carried on most largely? What conclusion do you draw from this?

C. Turn to the *Atlas of World Agriculture* and to the table of food production, page 38. From these determine how the countries that are most heavily shaded on your manufacturing map compare with the others in the following respects: (1) the total production of staple crops, such as wheat, barley, rye, oats, sugar, and rice; (2) the total number of cattle, horses, and sheep; (3) the per capita production of staple crops and of animals; and (4) the per acre production of crops and animals. How far does this comparison indicate that even if no food were imported from abroad the countries that are prominent in manufacturing would be able to produce food enough for a comparatively dense population, and thus would have a good labor supply to furnish the necessary workmen for factories?

D. The relation of relief to manufacturing depends largely upon transportation and will be discussed in a succeeding section. Turn back, however, to the problem on the relief of Europe, page 15. What relation do the five countries where manufacturing is most highly

developed, that is, where the per capita production is highest, bear to the western lowland? In each of the five countries make a list of the manufacturing cities having a population of over 200,000. Where are they located in reference to the plain? What does this indicate as to the relation of relief to manufacturing?

E. In order to determine whether the presence of coal and iron are determining factors in the development of manufacturing, turn to the encyclopedia or Stateman's Yearbook, and prepare a table showing in parallel columns the production of (1) coal, (2) iron ore, and (3) iron, in each of the following countries: Britain, Belgium, Germany, France, Spain, Norway, Sweden, the Netherlands, Austria-Hungary, and Russia. Convert these figures into a per capita basis. On this basis how closely do the five countries that stand highest (a) in coal, (b) in iron ore, and (c) in iron compare with the five that stand highest in manufacturing? What do you conclude from this as to the relative value of coal and of iron ore in stimulating manufacturing? Remember that aside from human energy iron and coal are the two great essentials of manufacturing. Does the table indicate that manufacturing flourishes most in coal regions or in regions where iron ore is produced? Does it show that iron ore goes to the coal fields to be smelted or that the coal goes to the iron mines?

F. The possibility of bringing food and raw materials from abroad has already been shown in the problem on the position of Europe (page 14). In order to bring out the facts more clearly prepare a table showing the five chief imports of the five countries that are most heavily shaded on your manufacturing map. What is the nature of the imports to the manufacturing countries? How do the imports compare in character and value per capita with the imports to the non-manufacturing countries? If these imports were cut off what would be the effect upon the life of the people in the two sets of countries?

European Transportation.

A. Europe is a natural center of transportation. In order to see how much it excels all the other continents in this respect:

1. Compare the railroad mileage of Europe with that of the United States (a) per 100 square miles, (b) per 100 population.
2. Compare the length of the coast lines of Europe and the United States.
3. Compare the mileage of navigable rivers in Europe and the United States.

4. Compare the mileage of canals in Europe and the United States.
B. One of Europe's great advantages is the ease with which coal and iron, the two greatest fundamentals of manufacture, can be brought to the seacoast. In order to appreciate the importance of this factor make the following investigation:

1. Ascertain the distance from the sea to the chief British, French, Belgian, and German coal fields. Compare this with the distance from tidewater to the coal fields of Pittsburgh, Colorado, Western Canada, and Russia. Compare the European distances with the distances from the Pittsburgh coal fields to Boston. Also compare the chances to use water transportation from these different fields.

2. Compare the distance and difficulty of getting iron ore from the shores of Lake Superior—for example, from Hibbing, Minn.—to Pittsburgh, Buffalo, and Chicago with the distance and difficulty of getting it either from northern Sweden by way of a Norwegian port, or from Bilbao to Glasgow in Scotland, New Castle in England, or Cardiff in Wales.

C. From the encyclopedia, the Statesman's Yearbook, or the table in this book (page 45), prepare a table showing in parallel columns the production of (1) iron ore, (2) iron, and (3) coal in each of the following countries: the United Kingdom, Belgium, Germany, France, Spain, Norway, Sweden, the Netherlands, Italy, Austria and Hungary, and Russia.

What does this show as to the relative importance of ore and coal in the production of iron? Add to your table a column showing the amount of coal imported to each country and the approximate source of the coal. What does this suggest as to the extent to which coal is taken to the ore compared with the extent to which the ore is taken to the coal.

Now add to the table the imports of cotton, lumber, and grain. Does the amount of the last three products depend on the amount of coal? What does this indicate as to the relation of a supply of coal and hence of mechanical power to the character and volume of imports?

Sum up the result of this by stating how the easy conditions of transportation in Europe tend to increase manufacturing by their effect upon the movement of coal, iron, cotton, lumber and grain.

D. One of the most striking conditions in the present war has been the effect of paralyzation of transportation in Russia. In order to understand this, picture what would happen in the United States if the Great Lakes and the Gulf of Mexico were closed for a few years. Then

suppose that the Atlantic ports were also closed. Call to mind the railroad freight situation during 1918, and try to make an estimate of the chief kinds of business that would be paralyzed under such conditions. Remember that both imports and exports would be cut off from the Atlantic and the Gulf and from much of Canada. Remember, too, that while the United States is 3,000 miles wide and has half a dozen transcontinental railroads, Russia and Siberia form a land mass twice as wide and have only one transcontinental railroad.

PART II

THE COUNTRIES OF EUROPE.

THE BRITISH ISLES.

I. The Insularity of Britain and Its Relation to the Character of the British People.

General statement.—Unlike the other countries of Europe the United Kingdom is insular. Not only was England far removed from the early civilizations of the Mediterranean and central and western Europe, but it was separated by the “silver streak” of the English Channel and by the North Sea from ready contact with these earlier civilizations on the continent. This isolation from the rest of Europe is largely responsible for the late entrance of England as a strong force into the affairs of Europe. For many centuries England was a pastoral country, little known, without trade or commerce except as the trade was carried on by continental peoples who came to the out-of-the-way British shores for what small trade they could secure. The invasions of England by north European peoples—the Danes, Angles, Saxons, and Normans—were so widely spaced in time and so limited in extent because of the water boundaries that there was given the opportunity for the welding together of all into a more or less homogeneous group on the lowland sections of England. Only in the distant highlands of Wales and Scotland and on the still more isolated island of Ireland were the aboriginal or older races and customs given a chance to survive, as they have done in the distinctive groups of people—the Welch, Scotch, and Irish.

But while the water separated England from the continent it did not wholly isolate. Not only did various peoples from time to time cross the narrow channel, bringing new blood and new ideas to the island, but as Europe developed in civilization England soon felt the new influences and was greatly affected by them. In fact, as England grew in power, as she absorbed or developed a new civilization, she even attempted to extend her control across the channel to French soil. But the strength of the natural water boundaries asserted itself, and Britain again became and has remained wholly insular, de-

veloping her own language, institutions, and customs that mark off England's culture from that of the continent as sharply as the water boundaries make a physical separation.

But while the separating waters left the English distinct from Europe racially and politically, England was able to profit commercially and intellectually by her close proximity to the mainland. This advantage was further increased by the fact that England lies opposite the great rich lowland region of Europe with its rivers all pointing toward the similarly rich lowlands and rivers of England. The plains of England and of Europe face each other, inviting commerce. It might be thought that this fact would bring no greater advantage to England than to the countries lying opposite on the continent. But it is here that the value of England's separation is made clear. While the rich open plains of the continent were overrun with armies, England was protected from invasion by the separating waters. Hence, the English could develop in peace, while their neighbors across the channel were destroying each other's cities and crops and population. England's insular position meant centuries of peace to England, while all the rest of Europe was again and again devastated by war. Furthermore, since the surrounding waters were a natural protection, England had no need of a large army, such as has so long drained the manpower of the continental nations. A powerful navy, to be sure, has developed as Britain's military protection, but even a large navy makes relatively small demands upon manpower as compared to an army. Hence, the English people, while a part of Europe, have lived aloof, feeling "secure and cocksure" in their island home, relying implicitly on the sea and the navy for their protection.

Closely associated with England's insular position is the Englishman's love of personal liberty. The Englishman is an individualist. Protected by nature from foreign invasion, cooperative effort has not been imperative, as it has been, for example, in Germany where the constant fear of outside invasion has encouraged collective effort and dependence upon strong military leaders. As a consequence, the Englishman early developed a strong feeling of personal independence. Personal liberty and freedom of personal action are leading characteristics of the English, manifesting themselves alike in his political, economic, and commercial life. He chafes under restraint, can in no way sympathize with the docile submission of the German to central authority, and is constantly seeking more and more to enlarge the circle of his personal powers and individual liberties. In other words,

the Englishman has been a leader in the world's struggle for democracy. The center of the Englishman's thought is the individual rather than the state.

Questions and Problems.—1. Determine the width of the English Channel between Dover and Calais; between Portsmouth and Cherbourg; of the North Sea between Margate and Ostend; between Helgoland and Hull; between Scotland and Norway.

2. The English Channel has been called the "corridor to Europe." Discuss the appropriateness of this term. What facts of location and physical geography have helped to give England control of this corridor?

3. Give concrete illustrations of "international wars that were devastating Europe, while England developed in peace."

4. Why have the submarine and the aeroplane been more effective instruments of warfare for Germany than for England in the World War?

5. Study the map for the geographic reasons that have contributed to England's interest in Belgium and her willingness to defend Belgium's neutrality.

II. England—the Leader in the World's Commerce.

For a long time England has been known as the "ruler of the waves," since British ships have carried the bulk of the world's commerce. The British flag has been seen most commonly on the high seas and in the ports of the world. Wherever there have been goods to carry, there ply British ships. Rivers in the heart of Siberia, mid-ocean islands, tropical ports, as well as the great ocean highways, all know British ships.

The logical question, therefore, is Why did England become the leader of the world's commerce? The answer as far as geography is concerned is found in the following conditions:

1. The island home of the British.
2. The central position of England in relation to the land hemisphere.
3. The many excellent harbors of England.
4. Rich deposits of coal and iron.
5. A climate which gives the people great energy.
6. The need of great quantities of raw materials for factories at home.
7. The great quantities of finished products to be distributed.
8. The need of contact with many colonies.

Show carefully and in detail how each one of these eight geographical conditions has helped England become the leader in the world's commerce. This can be done in part by working out the problems suggested in the following pages. Commerce and manufacturing are so closely connected that it is almost impossible to consider one without the other.

III. Manufacturing Industries and Trade of Great Britain.

A. General Statement.

During the eighteenth and nineteenth centuries England rapidly developed into the most important manufacturing and commercial nation of the world. This growth was due to many reasons, of which the geographic are most potent. Geographic factors largely determined not only that Great Britain should be a manufacturing nation, but also pointed the way along which manufacturing should develop. These factors may be summarized as follows:

1. *Geographical position.*—Under this head two influences are clear: First, England's separation from the continent gave the long period of peace which, in the hands of an energetic people, greatly favored the growth of industry. The destructive wars on the continent not only hindered industrial development there, but also gave England the opportunity to develop markets for her manufactured goods. When, finally, peace came to Europe, England's industry and its accompanying trade were already developed and the markets of the world in her hands. A second advantage comes from the unusual commercial facilities offered by Britain's position, combined with her excellent harbors. Raw materials can be brought cheaply by steamship from all parts of the world to England and the manufactured products likewise readily distributed. For trade connections with north Europe and with North America the position of the British Isles is unequalled.

2. *Climate.*—A second geographic advantage of Great Britain is her climate. No other country comes nearer to having both the ideal temperature for physical work in summer and the ideal for mental work in winter. Moreover, the weather possesses a high degree of variability and thus is most stimulating. The healthy, ruddy English complexion, the English fondness for long walks, and the universal passion for out-of-door games, like football and cricket, are all evidences of the great energy and good health that result from the English climate. That same health and energy were important reasons

why England was one of the first countries to take up manufacturing and why she easily holds her own, although wages in England are higher than in any other European country.

3. *Coal.*—A third advantage possessed by Great Britain for the development of trade and manufacturing was coal. Large deposits of the highest-grade steam coal are found in several places both inland and on the seacoast. Although factory manufacturing began with the use of the abundant water power produced by the heavy rainfall on the Pennine Mountains, the presence of coal gave the opportunity for industrial and commercial expansion. Coal not only became the chief source of power for manufacturing, but it made possible the development of iron smelting and enabled the fast iron steamship to surplant or supplement the slow wooden sailing boat. Hence, coal gave England unsurpassed advantages, both for power and for transportation, the two factors most necessary for industrial development.

4. *Raw Materials.*—In raw materials for her developing industries England was relatively poor. Only two have been of first importance. Wool production has long been very important, furnishing material for a large woolen industry in addition to an export of raw wool. Iron ore deposits laid the foundation, together with coal, for the large iron, machinery, and ship-building industries, although in recent years England has been importing increasing quantities of ore as her own iron deposits have declined. With the best location in the world, a climate that is almost ideal, an abundance of coal, a good supply of easily accessible iron ore, and a fair supply of wood, England was in a position to outstrip all competitors. Her deposits of coal and her geographical position have made it easily possible to import all sorts of raw materials for her industries and food for her workers. She pays for these with her manufactured goods and with the profits she is making from the great merchant marine that has grown hand in hand with her manufacturing industries. These have made England at the same time both the leading manufacturing and the leading commercial nation of the world.

B. Imports and Exports.

1. Make a list of the 5 leading imports into Great Britain and their value under each of the following headings: (1) raw materials; (2) foods; (3) manufactured products. From what part of the world do these imports mainly come?

2. Make a similar list for exports, stating the chief countries of destination.

3. Of the exported manufactured goods given in question 2, which ones depend to any considerable extent upon domestic raw materials?

4. (a) Compare England's facilities for obtaining iron ore for her blast-furnaces in southern Wales with the facilities of the Pittsburgh district for obtaining supplies of iron ore. (This question involves a comparison of the distance of Pittsburgh from the Lake Superior iron ore deposits and of the means of transporting the ore to Pittsburgh, on the one hand, with the distance of south Wales from the Spanish or Swedish iron ore deposits and the means of transportation, on the other hand.)

(b) Is the English or American steel region best situated for the development of an iron and steel industry for export? For domestic consumption?

5. Compare old England with New England as to facilities for securing wheat, meats, and dairy products for their large industrial populations. (Assume that both regions find it equally impossible to produce sufficient food for their own consumption.)

6. Compare the cost of transporting cotton from Galveston, Texas, to Boston, Mass., with the cost of transporting it from Galveston to Liverpool. Also compare the cost of getting coal to Maine from West Virginia and to Manchester from the nearest coal field.

7. Draw conclusions from the answers to the foregoing questions, and similar questions that will suggest themselves, as to comparative advantages or disadvantages of England and of the industrial sections of other countries in securing raw materials and food.

8. What reasons can you suggest for England's policy of colonial expansion? What facts have aided her in this expansion?

9. Is the British Empire, that is, the United Kingdom and all its colonies, economically independent of the rest of the world? Examine the colonies for the products they send to England and try to discover what important products necessary for the development of a modern nation are not, or can not be, secured from England's colonial possessions. Compare with France and Germany.

C. The Importance of Cotton Manufacturing to Great Britain.

1. Prepare a table showing the number of cotton spindles in the leading countries of the world for 1913. What per cent is found in Great Britain? in Germany? in the United States? in all of Europe outside of Great Britain.

2. Make a table showing in one column the amounts and sources of raw cotton imports by quantity and value; in a second column show

the value and destination of cotton goods exported from Great Britain.

3. What proportion of the wage earners of Great Britain are employed in cotton mills? in woolen mills.

4. Over 83 per cent of England's cotton manufacturing is in the Lancashire district. Enumerate the reasons for this concentration of the industry, paying attention to the effect (a) of position both upon imports and exports, (b) of climate both upon man and upon cotton fiber, and (c) of coal.

D. England's Merchant Marine.

1. Find a table of the tonnage of the merchant marine of the leading commercial nations of the world for the year 1913. Arrange this in order of size. Rearrange according to tonnage per capita. What does this rearrangement suggest as to England's relation to other maritime countries?

2. What percentage of the world's tonnage was controlled by England in 1913? by Germany? by the allied and neutral countries of northwestern Europe combined, that is, Britain, the Netherlands, Belgium, Norway, Sweden, and France? Obtain estimates of the tonnage that has been sunk by submarines, and discuss the German submarine policy in the light of these facts.

FRANCE.

I. Effect of the Double Sea Front.

General Statement.

France is the only country of Europe which borders upon two seas and is open to their influences. Its frontage upon the Atlantic Ocean on the north and west and upon the Mediterranean Sea on the south give it a great advantage. Spain, to be sure, borders upon the same bodies of water, but the mountainous rim of its high plateau shuts out the influence of the ocean. As the result of a two-fold frontage the history of France has been closely allied with that of Italy on the one hand and England on the other. Because influences from the south could penetrate so easily, France has long been the chief Latin nation. Caesar, who is more read than any other Latin author, carried on his wars in France largely because of the easy entrance through the Mediterranean doorway. In many parts of southern France, Roman ruins are almost as abundant and magnificent as in Italy. Northern France, on the other hand, was the country of the Gauls and was the region whence the ancestors of the British passed over to their island home.

The Norman Conquest was the last great movement of the so-called Nordic or Teutonic population. Perhaps the fact that the Latins from the Mediterranean and the Nordics from the Atlantic regions met mainly in France is the reason for the versatility of the French people. In modern days the openness of France to the south has been one reason why she has been regarded as the chief Roman Catholic nation. It has caused her to become the protector of the Roman Catholics in the east and of other Christians in Syria. The sea front on the north, on the other hand, causes France to have an enormous trade with England and with the United States and has been an important reason why the Great War found France, England, and America fighting side by side on French soil.

Commercially, France shows the same division in accordance with its two oceanic fronts. In the south, the imports consist of oriental products, such as peanuts. Mail steamers for Egypt, India, and the Far East make Marseilles one of their chief termini. In northern France, the imports and exports are quite different from those of the south. Cotton is brought from America, woven into high-grade textiles, and exported in the form of beautiful articles of dress to England and America.

The manufactures of France naturally differ in part because of the countries to which the two coasts give access. In the south, factories for the production of olive oil and peanut oil, for example, are important. In the north, cotton mills use material that comes across the Atlantic. In the south, the exports of manufactured articles consist of relatively crude products, such as gaudy cloth for the people of Algeria. In the north, the exports consist of the finest grade of materials together with highly finished metal products.

Again, the colonial history of France is bound up with the fact that it has two sea frontages. The southern front is responsible for the African colonies of Algeria and Tunis and, to a less degree, for the Asiatic colonies near China. Marseilles is noted for its colonial institute. The colonial ventures of France across the Atlantic have not fared so well as those on the Mediterranean front. Canada promised to be a great French colony, as did Louisiana, but the promise was never kept.

Still another result of the double sea front is that France has resorts on the seacoast for both summer and winter. Nice and the neighboring regions attract the pleasure seeker in the winter, while the Norman coast is almost equally attractive in the summer.

Specific Problems.

1. *Harbors*.—In order to estimate the effect produced by the two sea fronts compare the main harbors upon the Atlantic and Mediterranean coasts. How many cities of over 100,000 population lie on each? How do they compare in size and influence? What does this indicate as to the relative importance of the Mediterranean and Atlantic trade? How do the harbors on the two fronts compare in shelter, depth of water, etc.? Use an encyclopedia.

2. *Navigable Rivers*.—From an encyclopedia or some similar source determine the four chief navigable rivers of France. Name and locate the cities of over 100,000 population upon each. What hindrances to navigation exist in each, and how are they overcome? In view of the navigability of the rivers and the size of the cities upon them, what do you conclude as to the relative accessibility of France from the two seas? How does this help to account for the fact that in early days France was primarily a Mediterranean country while in later days her interests have become more closely connected with the Atlantic?

3. *The Exports and Imports*.—From an encyclopedia, make a list of the five chief exports from Marseilles and from each of the two main northern ports. To what countries do these exports chiefly go? Are the raw materials which enter into them largely of foreign or domestic origin? As a help in answering this last question make a list of the five chief imports to the northern and southern ports. Where do these imports come from, what are they mainly used for? On the basis of these facts compare the northern trade with the southern.

4. *Colonies*.—List the chief African colonies together with their total trade with France. How large is the French population of Algeria, which contains most of the French colonists? Compare the figures for the total volume of trade between France and its colonies with the similar figures for the total volume of trade between England and Canada. Compare the number of French living in Algeria with the number of French-speaking inhabitants of Canada. On the basis of these figures and any other facts at your disposal, write down your conclusions as to whether France is benefited more by the colonies tributary to its Mediterranean front than it would have been had it retained the colonies tributary to its Atlantic front.

II. Expression of Artistic Temperament.

France is among the world's most energetic nations. Geographical

conditions have favored this development. The country lies in such a latitude as to have energizing temperatures. The summers are not too warm for vigorous exertions, and the winters are mild enough to make outdoor work a pleasure. Moreover, the westerly winds from the north Atlantic, alternating with winds from other directions, bring a variety of temperatures even within a short space of time, so that man is continually stimulated in his work. The rainfall is also encouraging. All over France it is sufficient to make farming successful. Hence it promises ample reward to the laborers on the farms.

Nations vary greatly in responding to the energizing climate of temperate regions. Some who live in regions endowed with coal and iron deposits turn to manufacturing and show their energy of mind and body by the quantity and quality of their products. Others with excellent harbors spend their energy in commerce. Still others respond in other channels, such as militarism. The French, who live in a country having neither great mineral deposits nor many excellent harbors, but who are born with an artistic temperament, expend their energy along artistic lines.

The artistic quality of the French shows in many ways. The following are samples:

1. Manufactured products.

- (a) Fabrics, silks, embroideries. (Artistic quality especially shown in colors and designs.)
- (b) Scientific instruments.
- (c) Chinaware and glass.
- (d) Jewelry.
- (e) Wines.
- (f) Canned goods, like sardines and petits pois.

2. City planning.

- (a) Radial street plan.
- (b) Boulevards. (The word itself is French.)
- (c) Supervision of height and type of buildings.

3. Architecture.

- (a) Cathedrals.
- (b) Arches.
- (c) Bridges.
- (d) Chateaus.

Problem.

Select one of the three lines in which France shows her artistic quality, and carefully investigate it for an oral or written report.

For instance, if "manufactured products" be one of those selected, visit stores where they are likely to be on sale, and study their quality. Try to find out in each case how the artistic quality of the French shows itself. Scientific instruments can probably be found for inspection in the laboratories of your university.

Most of the research work needed in the other lines of investigation must be done with books, magazines, and encyclopedias.

GERMANY.

I. Scientific Agriculture in Germany.

Germany in recent decades has made great progress in the development of scientific agriculture. Reasons for this development are partly geographic and partly economic.

Climate.—The climate of Germany partakes both of the marine and of the continental, being comparatively mild and moist in the west and more dry and extreme in the east. The difference is not sufficient, however, to cause any great divergence between the crops of the two sections. Between the north and the south there is not much difference of climate because the greater altitude of the south counteracts the warming effect of lower latitude. Hence, the range of crops is relatively limited.

Soil.—The geological structure and, therefore, the soil of south Germany is complicated and can not be briefly characterized, but on the whole it is relatively poor compared with soils such as occur in the American prairies. The great plain of north Germany is composed of recent sediments overlain in large part by glacial deposits. These give rise to light and sandy soils over large areas. To secure adequate yields from such soil requires constant attention, the application of chemical fertilizers, and the employment of chemical analysis to correct the acid condition of the soil.

Population, Labor, and Markets.—Manufacturing and commerce grew up in Germany for much the same geographic reasons as in England, except that Germany is not insular and hence is not England's equal in ocean commerce. With the growth of manufacturing in Germany, large markets for agricultural products began to appear in the various industrial centers. At the same time these industrial centers furnished cheap labor. In order to provide food for the growing population, it was necessary for German farmers to reorganize their crop systems and to intensify production by the utilization of seasonal labor, by the application of chemical fertilizers, and by other scientific

methods. Thus, the geographic conditions of (1) favorable position, (2) stimulating climate, (3) easily available coal and iron, (4) restricted opportunities for ocean commerce, (5) a soil of only moderate fertility, and (6) a climate rather cool for the most profitable agriculture led to the growth of scientific agriculture and to the establishment of many agricultural schools. Explain the part played by each step in this process.

Ownership.—In the east of Germany are many large landed estates, but in the country as a whole relatively small farms predominate. The intensive cultivation which results from small farms and relatively cheap labor led to the introduction of special crops which require much hand labor and which yield relatively large returns. The cool and moist summers and the long pleasant autumns caused root crops, especially the potato and sugar beet, to be the crops largely chosen for this purpose. Although the sugar beet was first developed by the French, it was taken up by the Germans and improved to a much higher point of productivity. The desire to develop this crop was an important factor in stimulating the Germans to a study of soil chemistry and of the other sciences involved in scientific farming. Further stimulus to the industry was lent by forms of governmental protection. In 1914 Germany was one of the largest sugar exporters of the world.

Sugar-raising region of northern Germany.—(See *Atlas of World Agriculture*.)

(1) Make tables of normal sugar production, total consumption, and consumption per capita for the six chief European countries and for the United States, Brazil, Egypt, India, and Japan.

(2) Note the temperature, rainfall, and commerce in countries with large sugar production. Put these conditions in statistical form in a table.

(3) Note the rainfall, temperature, soil, and vegetation in the part of Germany where sugar beets are raised most abundantly.

(4) Pick out other parts of the world and especially of Europe where similar geographic conditions prevail. Make a table showing their relation to sugar-raising.

(5) Compare the demand for sugar with its production. Work out the connection between the two. In doing this consider the transportation facilities and political relations between the great sugar-consuming countries and the chief sources of cane sugar.

(6) Sum up your conclusions as to the reasons why Germany is

preeminent in sugar-raising. Discuss these conclusions in relation to the improvement in the quality of the sugar beet.

II. Relation of Mineral Deposits to Industry and Technical Education.

General Facts.—The great mineral belt of Europe extends in a general east-west direction across the continent from northern France and Belgium to northern Austria. It lies chiefly in the border region between the low plains of the north and the highlands of the south. Here, coal and iron, together with less important minerals, have marked out a great industrial region extending through northern France, Belgium, Luxemburg, the Rhine Valley, southwestern Prussia, Saxony, Bohemia, and southern Poland. Hence, we find here the belt of densest population.

The German Empire as a nation was late in entering the intense European competition for world trade. As soon as the race was entered, however, the leaders of thought recognized the necessity of education in order to surpass their competitors. Since Germany was not so well situated for commerce as its great rival, England, it was necessary, also, that the products manufactured in Germany should have a high value in proportion to their bulk. This could be secured by producing goods which required a high degree of skill or technical knowledge. In addition to this, Germany's unfavorable frontiers and crowded position in the heart of Europe joined with other causes in leading to militarism. Hence, during the development of German industries there was a constant attempt to shape them in such a way that they could be utilized for military purposes. The fact that dye factories, for example, can readily be turned into munition works was one reason why the German government fostered the manufacture of dyes from coal tar.

Problems.

1. From the encyclopedia or other source obtain a list of the salts and other minerals mined in Germany. Compare this with a similar list for England. What is "kainite," and why should it be named in this connection? Explain how the presence of minerals in Germany has guided the activity of the Germans into chemical industries and stimulated technical education? Name as many industries as possible which are founded largely on chemistry and are highly developed in Germany.

2. In some good atlas find the region of densest population in Germany. Mark off this region on an outline map. On your outline map blacken the regions that produce coal, and shade with some other

color the regions producing iron. Do the coal and iron regions lie near each other? How do the regions of coal and iron correspond with the regions of greatest density of population?

3. Next, mark off on your map the regions of greatest manufacture, or the industrial regions. What criterion can you use for determining industrial regions? What is the relation of the industrial regions to the regions of coal and iron and of densest population?

4. Locate on your map at least ten of the largest cities of Germany. How many of these, and which ones, appear to be related to the coal and iron regions either directly or indirectly? What is the greatest commercial city of Germany? Can you see any way in which its great commerce may be due, at least in part, to the industrial regions? What articles are manufactured in the region of densest population? From what raw materials are these things made? Where are these raw materials obtained? What becomes of the finished products? What necessities of the people of this region must be supplied from outside sources? Where were these things obtained before the war?

5. Compare the value of some chemical product with the value of the raw material from which it is produced, for example, dyes and coal tar. Mark on your map the chief cities known to be large manufacturers of chemicals. What are the factors entering into the high cost of chemical products?

6. How many great universities are there in Germany? Mark off any equal area in the United States and see if it includes an equal number of equally great universities. (Compare by number of professors employed or number of students enrolled.) What can you find out from reading concerning the number of technical and trade schools in Germany below university grade? Find the per cent of illiteracy in Germany and in the United States.

Summary.—Sum up all you have found concerning the relationships existing in Germany between technical education, chemical industries, and the presence of mineral deposits. In this connection the following articles are of interest:

Germany's Stolen Chemistry, by Townes R. Leigh, Manufacturer's Record, page 63, August 22, 1918; Germany's Real Position in Chemical World, American Exporters, September, 1918.

BELGIUM.

The Effect of Location on War and on Commerce.
General Statements.

Belgium is located in the central part of western Europe. Its sea-

coast of 42 miles is on the English Channel, opposite London. Belgium lies directly between Berlin and London, and its eastern portion is directly between Berlin and Paris.

Belgium is nearly flat and very little above sea level. Only in the southeastern portion are there altitudes in excess of 2,000 feet. This absence of high altitudes has favored the development of a wonderful transportation system. Navigable rivers are numerous and have been supplemented by a network of canals second only to those of Holland. Railroads, both heavy and light, have been built extensively. Electric and steam tramways are found in all the principal cities. The roads are generally paved or macadamized. In this state of 11,373 square miles, there are 1,360 miles of navigable waterways, 2,900 miles of main railways and 2,500 miles of light railways, and 6,000 miles of roads.

Thus situated, unprovided with any natural barriers, and possessing excellent means of transportation, Belgium early became the "cockpit" of Europe. Imperialistic nations sought to control Belgium because of her central location. Her warring neighbors struck at each other across her borders. Spain in the sixteenth century sought to control Belgium, and from this country she struck at the Netherlands. France made a conquest of Belgian territory in the seventeenth century. At the beginning of the eighteenth century, Belgium was made the battleground for the contending forces of England, the Netherlands, and Spain against France. Austria and Holland together exercised control over Belgium for a period in the eighteenth century. France conquered the country during the War of the Austrian Succession but was forced to return it to Austria at the close of that war. In 1790, Austria suppressed a revolt of the Belgians. In 1792, France struck at Austria at her weakest point—Belgium—and made Belgium a part of France. The Battle of Waterloo was fought on Belgian soil. Belgium was united with Holland to form the Kingdom of the Netherlands, but in 1830 the Belgians revolted. A convention of the five great powers met in London and secured the cessation of hostilities and the independence of Belgium as "a neutral state," but only after France had aided the revolutionists. It is noteworthy that imperialistic Germany struck at France and Great Britain through Belgium.

In a commercial sense, Belgium's location has been very favorable. Located on the sea and possessing numerous waterways, she could transport her heavy raw materials cheaply. Coal and iron ore could

thus be brought together and iron and steel products manufactured at a relatively low cost. Belgium has practically exhausted her native deposits of iron ore, but she can import such ores from northern France. The coal beds of Belgium are extensive. Sand abounds in the coastal regions. Hence; before the war, glass was manufactured on a large scale. Limestone occurs in the coal fields. The manufacture of cement is thus made possible and was conducted on a grand scale before the war. Two-thirds of the cement produced was exported, so great was the output. There were many other industries, such as the paper industry, manufacture of electrical appliances, of candles, of enameled ware, of chemicals, of leather goods, and of jewelry. Diamond-cutting was noteworthy. The production and exportation of firearms was very extensive before the present war. Belgium is in the heart of industrial Europe—across the English Channel to the west is England, across the southern border lies the industrial section of France, on the east is industrial Germany, and on the north the commercial Netherlands.

Agriculture though carried on very extensively no longer produces sufficient food to feed Belgium's people. Hence, the importation of food in return for manufactured articles is very large. The soil is sandy and poor along the coastal plain but responds to fertilization. Before the war, gardens abounded everywhere—factory workers in large numbers lived in suburbs and had their gardens to supply food cheaply and thus counteract their low wages. Wheat, rye, and potatoes were the leading crops. In proportion to her area, Belgium grew a greater amount of wheat than the leading American wheat States—Kansas, Minnesota, or North Dakota. Before the war, the production of potatoes in Belgium was about sixty times as great per square mile as in the United States, the population being about twenty times as great per square mile. In spite of the high development of agriculture, Belgium's population was too dense—the most densely populated country in Europe—for the land to supply food and raw materials; hence Belgium imported over a billion dollars' worth of such materials before the war. She met this outlay by exporting manufactured articles. Her location, as we have seen, greatly facilitated such trade.

Specific Problems.

1. On a map of western Europe note the direction and distance of the railway lines from Berlin to Paris and to the ports on the English Channel. Note also the location of mountains or high altitudes along

the border between Germany and France. From these, explain fully why Germany struck at France through Belgium rather than through Switzerland, under the following points: (a) the time element, (b) movement of heavy artillery and great number of troops and war supplies, (c) obtaining control of the transportation centers of France, (d) anticipating war with England, (e) to make the greatest conquest.

2. The northern part of France possesses the only good iron ore in the country and is the great manufacturing section of France. Belgium also possesses some deposits of iron ore and considerable coal beds, and great iron and steel manufactures. How are these related to the choice of routes that Germany would take in order to make the most strategic attack on France?

3. In the light of the foregoing problems and their discussion, what would be the probability of a permanent peace if the Germans were not driven out of Belgium by force of arms? Discuss.

4. What factors growing out of the War might affect Belgium's commercial position adversely, and what ones improve it?

5. What relation is there between the flatness of Belgium and the rainy seasons, on the one hand, and military campaigns, on the other?

6. In what ways did Belgium's skill in the manufacture of highly finished products appeal to imperialistic Germany?

THE NETHERLANDS.

Commerce and Colonies in Relation to Climate and Position.

The Netherlands, one of the important commercial countries of the world, is also one of the smallest countries. Its total land area is about equal to the combined area of Massachusetts and Connecticut. It has as many people as Illinois, although that State is $4\frac{1}{2}$ times as large. In 1915 the population was approximately four-fifths that of the Dominion of Canada, a country larger than the United States. These Dutch people who live in such large numbers in so small a space are prosperous, well educated, and maintain a high standard of living. These facts lead at once to the question of how such a large population can be supported in such a small country. The explanation lies in the extensive commerce which is carried on by the Dutch. In order to understand the factors which have influenced the development of this commerce it is necessary to consider: (1) the early development of the Netherlands' commerce and the acquisition of her colonial possessions, (2) the fishing industry, (3) agriculture, (4) manufacturing, and (5) trade and shipping at the present time. (See tables, pages 38 and 45.)

Development of Dutch Commerce.—The development of Dutch commerce was associated with the endeavors of a number of European nations to trade with tropical countries which produce spice, sugar, rice, and other commodities which at that time were almost unknown in Europe. Until relatively modern times the food of northern Europe was limited to the products grown at home. Without any of the modern means of preserving meat or other food and without the potato and many of the vegetables which now form an important part of the food of poor people it is evident that the diet of even the wealthy classes was monotonous. Consequently, during the early centuries spice, sugar, and similar articles were brought from the Orient across Asia Minor to Venice and Genoa, whence they were distributed to northern Europe. In the fifteenth century the activities of the Turks closed the trade routes across Asia Minor, a fact which stimulated the explorations which culminated in the discovery of America in 1492 and especially in the discovery by the Portuguese of the all-sea route around Africa in 1498. The oriental trade then shifted to Portugal and that country prospered accordingly.

In order to secure the much desired spice, sugar, and other oriental products the Dutch developed a coasting trade with the Portuguese and then became the principal distributors of these products to all north Europe. This trade was the basis of Dutch commerce. In 1580 Spain and Portugal were united under one government. One of the first acts of the new government was to forbid the Dutch access to Lisbon and the other Iberian ports. This was such a blow to the Dutch that they shortly sent a fleet around Africa to the Orient where they built up an important trade with the island of Java as a center. In order to manage this trade the merchants of the Netherlands organized the famous Dutch East India Company, which for a time was one of the most influential commercial companies in the world. At the height of its prosperity in 1669 it possessed 150 trading ships and 40 ships of war, employed 10,000 soldiers, and paid a dividend of 40 per cent. In time, the Dutch established colonies in South Africa, South America, and the West Indies. It was the descendants of the Dutch colony at the Cape of Good Hope that fought the British in the Boer War. The Dutch have maintained their East Indian colonies and possessions until the present time. They comprise a total area of approximately 735,000 square miles and have a population estimated at 48,000,000 and are so closely related to the mother country that nearly four-fifths of their total export goes to the Netherlands.

In proof of the above statements look up (1) the population, (2) the total commerce, (3) the merchant tonnage, and (4) the number of dependents in the colonies of the Netherlands, Great Britain, France, Italy, and the United States. Find the total commerce, merchant tonnage, and colonial dependents per 1,000 of the home population in each country. On this basis, how does the Netherlands compare with the others?

The Fishing Industry.—The fishing industry, which was in existence as early as the thirteenth century, has been an important factor in the development of the commerce of Holland. Beginning simply as a means of supplementing the meager food supply of people living near the coast, it developed into an important industry after the discovery in the 14th century of a method of curing herring. The cod and herring fisheries of the North Sea and contiguous waters furnished a practical school for the training of the sailors who in later years manned the ships which brought wealth and renown to the Netherlands and the other maritime countries of northern Europe. Moreover, the salt and dried cod and herring furnished a cheap and nutritious food to the slaves and natives who worked in the sugar and other plantations in the East and West Indies.

Agriculture.—The Netherlands is a part of a great cattle-raising and dairying section of Europe which extends from Brittany in northwestern France, through Belgium, the Netherlands, and Denmark to southern Sweden. In the Netherlands, cattle-raising is the leading agricultural interest, and the Dutch dairy products command respect in England, Germany, and, in fact, wherever they are sold. Cattle-breeding is carried on to some extent in all parts of the country, but the provinces bordering on the Zuider Zee have the largest herds and the finest cattle. In spite of the fact that abundant rainfall and numerous fogs keep the pastures green throughout the year, an intensive cultivation of fodder crops does not suffice to support the cattle, and it is necessary to import much grain and other fodder. Before the war, the Netherlands imported from the United States large quantities of corn and cottonseed meal for this purpose. During the war these importations were so curtailed that the Netherlands was forced to slaughter large numbers of her cattle. A ready market for the beef was found in Germany. This emergency demonstrates clearly how dependent the Netherlands is on foreign commerce for the maintenance of her most important industry.

Manufacturing.—Like the dairy business the manufacturing in-

dustries of the Netherlands depend upon other countries for most of the necessary raw materials and for a market for most of the finished products. Outside of a little coal and some clay, the Netherlands has few of the raw materials needed by manufacturing industries. However, nearness to English coal fields, access to the raw materials from the territory drained by the Rhine, and control of the trade of her colonies have led to the development of certain specialized manufactures. Dutch brick, pottery, and earthenware long have been famous; butter and cheese factories are found in nearly every village; and cottons, woolens, and linens of high quality are produced.

Trade and Shipping.—The position of the Netherlands at the mouth of the Rhine on the North Sea makes it one of the gateways to the great plain of northern Europe. The Rhine and Schelde rivers in their lower course divide into a number of distributaries which with the Zuider Zee and other indentations of the sea constitute a series of natural waterways. Certain of these, like the New Meuse at Rotterdam, have been so improved that they permit the entrance of the largest ocean-going steamships while others have been canalized and connected by canals so that the Netherlands has a complex system of canals with a total length of 1,500 miles. The Rhine is of the utmost importance to Dutch commerce. A large fleet of tug boats and barges is maintained on it, and steam and gasoline-propelled barges are common. Down the river come barley and hops for the Dutch breweries; sand, gravel, and stone for building purposes; lumber from the Black Forest; and machinery and other manufactured goods from the Rhine cities; while up the river goes a wealth of products from the Dutch colonies and other foreign lands. In this connection it must be remembered that the Netherlands is situated at the mouth of the most important waterway of Germany so that it is no wonder that Germany looks enviously on Belgium and the Netherlands, the two small countries which lie across her most direct outlet to the Atlantic.

The cosmopolitan character of the trade and commerce of the Netherlands is demonstrated by a survey of the principal imports and exports. Spice, coffee, sugar, tobacco, and indigo come from Java and the other East Indian islands; gasoline, raw cotton, and cereals from the United States; coal and manufactured goods from England; iron ore from Spain; grain from the Baltic provinces, Archangel, and the Black Sea; and cereals, lumber, stone, and other products from Germany. The export trade is almost as varied, for the tropical products from the colonies go to Germany; butter, cheese, fruits, and vegetables

to England; fish to Germany and Belgium; and a great variety of manufactured and other goods to the Dutch colonies and other areas served by the Dutch steamship lines. The bulk of the foreign trade is with Germany, England, Java, Russia, and the United States. So important has the trade between the Netherlands and these countries become that the value of the total foreign trade more than trebled during the last half of the nineteenth century. Because of its extensive overseas interests the Netherlands, in addition to maintaining the National Mail Service to the East and West Indies, Africa, and the United States, has a large number of tramp steamers under its flag. So distinctly maritime is this small country that in addition to Rotterdam and Amsterdam, both ports of the first class, there are at least twelve other important ports.

Problems.

1. What physiographic and economic factors were involved in making Amsterdam and Rotterdam first-class ports?
2. State the geographic and economic considerations which constitute the basis of the neutrality of the Netherlands.
3. The development of railroads came late in the Netherlands. Why?
4. Belgium has a much greater railroad mileage than the Netherlands. Why?
5. What building materials would you expect to be extensively used in the Netherlands. Why?
6. Name and locate the principal islands in the Dutch East Indies, in the Dutch West Indies. Which island in the Dutch East Indies has the largest population? Why?
7. Compare the natural resources of the Netherlands and Belgium, the Netherlands and Scotland.
8. Why are "sugar colonies" of less importance to European countries at present than in 1500?

DENMARK.

Denmark is little more than a level sandy plain, a peninsula and some islands of low fertility surrounded by cold water from which comes much cold, raw, misty, and rainy weather. Originally there were many marshes. There are no waterfalls or minerals of importance, and thus no sources of power except wood and peat—a great calamity. Hence, farming is one of the few possible occupations. It has been developed to such a degree of perfection that many

Englishmen and Americans have come to the sandy shores of Denmark to learn how the Danes have stamped out bovine tuberculosis and developed agricultural cooperation to an unusual degree.

Find further evidence along this line in bulletins on Denmark by the United States Department of Agriculture, and in "Agricultural Cooperation in Denmark," by H. Rider Haggard.

1. Study the list of Danish exports in the *Statesman's Yearbook*, and see how they show the place of agriculture in Danish life. What do the imports, crop averages, and exports indicate as the main industry and as its chief auxiliary? Note especially the acreages of man food and cow food. Compare the number of cows and hogs in the United States and Denmark with respect to population and acreage. Do the same for Iowa and Denmark.

2. Examine Denmark's mineral imports and see how they have been pinched by the warring nations. Show how England and Germany, exporters of coal and iron, might have bargained with Denmark. What should the United States export to Denmark during the war? What should we not export? We have been its chief source of forage grains.

3. If Denmark manufactures cloth or machinery, what must it import?

4. What part do steel rails, cream separators, lumber and fish presumably play in Danish commerce?

5. The Danes import margarine for home consumption and export butter. What do you infer about their wealth?

NORWAY AND SWEDEN.

The Relation of Diverse Physical Conditions of Adjoining Countries to Industries and Politics.

In the following study of Norway and Sweden contrast the two countries at every step in order to see how far geographic differences explain the historic and political separation.

1. *Physical Features.*—Norway and Sweden make up what is known as the Scandinavian Peninsula. Norway on the west and Sweden on the east are separated by a mountain system known to those countries as the "keel." It is more like a plateau, however, with peaks rising above it and the lower land cut and grooved by

deep valleys. Norway, in the main, makes up the higher part of the plateau, so that, except in the southeast, the country is hilly and not adapted to agriculture. In Sweden the topography is more favorable.

Sweden may be divided into four physical regions: (1) the mountain and highland district of the north, (2) the central lowland with flat-lying plains, deeply wooded, containing many lakes, (3) the so-called Söland highlands, a gently undulating country, (4) the lowlands of the extreme south, made up of very flat-lying plains with rich agricultural land and extensive meadows.

Due to the greater elevations in the west and erosion by ice and water, the Norwegian coast is deeply indented, and many of the indentations are so pronounced as to isolate fragments of the plateau, making a series of islands along the coast. Inland channels of deep water are thus formed, so deep that large steamers can ply close to land. Only at rare intervals must a ship leave the protected waters when cruising along the coast.

What are the agricultural possibilities in countries like this? Compare the advantages of Norway and Sweden in this respect. Would you expect these countries to export or import food stuffs? Verify your statements by noting exports and imports before the war for both Norway and Sweden. Make comparisons of the two countries on a per capita basis.

2. *Climate.*—The climate of Norway and Sweden is unique in comparison with other countries of the same latitude. Southern Sweden has about the same latitude as Hudson Bay, yet the temperature in January averages about 32° in Sweden and about 4° F. at Hudson Bay. The comparative mildness of the Swedish temperature is due to prevailing winds from the southwest. These winds not only carry the ocean temperatures to this region, but drive the upper and warmer water layers of the Atlantic toward the east, so that they pile up along the coast. This, in a large measure, accounts for the ice-free harbors along the coast of Norway. On the southwest coast the mean daily temperature is never below 32° F. The Norwegian summer is hottest in the southeast about Christiania with a daily mean of 62.5° F.

The cloudiness of these countries is very high. In the north as many as three days out of four are cloudy. During the summer months the hours of sunshine are long, as in all northern countries, and thus the heat accumulated in twenty-four hours is greater than

in countries farther to the south. The winter nights, on the contrary, are extremely long and the day correspondingly short.

The rainfall is greatest on the west and especially the southwest coast, where as much as 80 inches is recorded. Eastward it decreases, so that the average rainfall for Sweden is about 20 inches. In both Norway and Sweden the rainfall on the whole increases from north to south.

Compare the climate of Christiania with that of Chicago, St. Louis, New York.

Write an account of a few effects that such a climate as that of Norway might have upon the habits and industries of the people. If the climate of Sweden were like that of Italy what change would you expect in the mode of life of the Scandinavians?

3. *Minerals.*—Neither Norway nor Sweden is rich in minerals. The lack of coal is a very marked feature and a great handicap. The problem of supplying fuel for heating and for the production of energy is enormous. This has been especially true during the war period. In Norway the metallic minerals are hardly worth noting, although silver, copper, and iron are mined in small quantities. One of the important industries is the mining and preparation of stone products.

In Sweden iron ore far outranks all other minerals. Swedish iron ore, because of its purity, is famous the world over, and is in great demand. Comparatively little of the ore is smelted in Sweden because of the lack of coal. The little that is smelted is done with charcoal and makes an especially valuable kind of steel. A little copper, silver, gold, lead, and zinc are produced.

What problems face Norway in making a great industry out of its rock products? What problems face Sweden as to iron. Pay special attention to (a) probable markets, (b) supply of labor, (c) supply of shipping and railway facilities, (d) supply of power, (e) maintenance of labor, and (f) kind of imports in return for exports.

4. *Forestry.*—Norway has forests in the southeast and in the Trondhjem districts, and forestry is a relatively important industry to Norway. But as a world producer, Norway is insignificant, although in recent years the pulp industry has become important. In Sweden, on the contrary, the widely distributed forests are highly important, not only to the nation, but to the outside world.

The sawmills are mostly along the Bothnian coast and are run either by steam, water power, or electricity. Vast quantities of timber are floated down the larger rivers in the north and down flumes and canals along the smaller streams.

What nations lead in the production of timber? How does Sweden rank? Why should forest industries in Sweden rank so much higher than in Norway? In getting out the timber what problems that were relatively simple in our northern forests are difficult for Norway and Sweden? What is the relation between the forests and water power in these countries?

5. *The Fisheries.*—Fishing is an important industry for both Norway and Sweden, although much the more important for Norway. In Norway cod fishing ranks first but mackerel, salmon, herring, and sea trout fisheries are also important. Swedish sea fisheries are mostly in the calm waters along the shore and mean much less to the nation than the oceanic cod fisheries do to Norway. In Norway deep-sea fishing has had a tremendous influence on the life and development of the people.

Enumerate some of the characteristics of Norwegian development that may have been influenced by their deep-sea fisheries.

6. *Commerce.*—Considerably more than one-third of Swedish exports are forest products. Lumber is by far the largest item, but wood pulp also takes high rank. Two other groups of products stand out prominently: (1) minerals, especially iron, steel, and iron ores, (2) food products derived from animals, such as, fish, meat, cheese, and butter. These three groups make up about two-thirds of the entire export. Sweden has two great items of import, food products for both animals and man, and coke and coal. About one-half of the entire imports come under these headings.

Norway is more of a commercial nation than Sweden. In fact, on the basis of her population she is the first nation in the world in shipping. As it is, her mercantile marine before the war was exceeded only by those of Great Britain, Germany, and the United States. Her chief exports are forest products and fish products. These make up fully two-thirds of the exports. Food, especially grains, clothing, and coal make up the leading imports.

Enumerate the factors contributing to Norway's greatness as a fishing and commercial nation.

Note the differences in natural conditions in this respect between Sweden and Norway.

How do the kind and quantity of exports from these countries give an index as to the nature of each country?

How do the kind and quantity of imports and exports show the life and industries of the people?

At various times a close political union has existed between Norway and Sweden. Discuss the physical factors that have been influential in leading to this.

What are the geographical reasons which led Norway to allow much of her mercantile marine to be destroyed by Germany without declaring war?

What geographic reasons are there why we have heard less about the sinking of Swedish than of Norwegian ships?

Compare the native resources of Sweden and Norway and try to determine which has the brighter future from this point of view.

Which has the better geographic position?

Sum up the geographical conditions of all kinds which today keep Norway and Sweden apart not only physically but in aims and interests.

AUSTRIA AND HUNGARY.

Diversity of Relief in Relation to Diversity of People and Interests.
General Statement.

A study of the physical map of Austria and Hungary will show the following distinct physiographic provinces:

1. *Hungarian Plain*.—This is the largest physiographic unit and includes nearly one-third of the total area of the empire as it existed in 1914. The levelness of the plain, together with the fact that its maximum rainfall comes in the summer, makes it especially adapted to cereal agriculture of the extensive type. This agricultural tendency is accentuated by the fact that the plain is not a region of any considerable mineral wealth. Communication within the plain is easy, and the Danube affords outlets both to the northwest and to the southeast. Racial unity generally prevails throughout the plain.

2. *Carpathia and Transylvania*.—This is a rugged region bordering the Hungarian plain from the north around to the east. Because of the rugged nature of the region, and the presence of forests and of mineral resources, the principal occupations are mining and forestry. Communication is difficult and in the higher Transylvanian section the mountains to the west form such a barrier that the Rumanian inhabitants find it easier to maintain communication with Rumania than with the

Hungarian plain. Transylvania contains the greater part of the Rumanians of Hungary who make up 14+ per cent of the total population of that kingdom. These Rumanians do not speak the Magyar language.

3. *Galicia and Bukowina*.—To the northeast of Hungary and separated from it by the Carpathians, locally known as the Beskids, lie the Austrian provinces of Galicia and Bukowina, which together may be classed as a distinct physiographic province. Much of this province consists of deeply cut valleys. Of the two main lines of drainage, one, the Vistula, is tributary to the Baltic, and the other, the Dniester, to the Black Sea. In addition to agricultural and forest resources, Galicia possesses the third most important oil field of Europe. The part centering about Cracow also shows considerable industrial development. Ethnically Galicia and Bukowina are principally Slav, and together they contain about 30 per cent of the population of Austria.

4. *Bohemia and Moravia*.—These Austrian provinces constitute a lowland area somewhat similar to Hungary, but much smaller, less level, and with the advantage of some valuable mineral resources. A low range of mountains separates the two, and the physiographic separation is further increased by the fact that the drainage of Bohemia is carried to the North Sea by the Elbe, while that of Moravia finds its way into the Danube. These two provinces, together with Silesia, are one of the industrial sections of Austria. Racially the Bohemians are Czechs, a people who have their own language, who hate the Austrians, and whose political aspirations look toward an independent state. The Moravians are Slovaks and are in sympathy, politically, with Czechs.

5. *Upper and Lower Austria*.—These two provinces are classed together and separated from the preceding because of their racial unity even though they are not a clearly defined physiographic unit. They contain the bulk of the German element of Austria and Hungary. Favorable location with respect to lines of communication, possession of mineral and forest resources, and racial characteristics have been elements that have contributed to make this the industrial section of Austria.

6. *Alpine District*. The several provinces within the Alps constitute another distinct physiographic region. Lumbering and woodworking are the most important of the industries. What little farming is done is of the intensive type. Important mineral resources are lacking. The people are largely German, though in the last century the exten-

sion of the boundaries to the southward brought in a considerable Latin element. In the more inaccessible portions, there are also supposed to be remnants of some of the earliest races of Europe.

7. *Karst Region.*—This section comprises the provinces of Croatia, Bosnia, Herzegovina and parts of Carniola, Slavonia and Dalmatia. Limestone abounds, and here is developed the classic example of rough topography known as "karst." The mineral resources are considerable, but they are as yet little developed. Agriculture is the chief industry, but it, too, is in a low state of development. One great handicap to agriculture is the fact that the major part of the rainfall comes in the non-growing season. Ethnically the people are Jugo-Slavs.

8. *Adriatic Provinces.*—The narrow coastal strip draining into the Adriatic forms a separate physiographic province. It is interesting to note that though Austria and Hungary are relatively near the Adriatic coast, they do not form its natural hinterland. The people of this section are largely of Latin and Greek origin, and their outlook is more toward the sea than toward the empire at their back, and Austria-Hungary is regarded as an inland empire.

Problems

1. What relation have geographic conditions to the many different ethnic units within Austria and Hungary.
2. Which shows the greater ethnic diversity, Austria or Hungary, and why?
3. a. On a map note the Austrian provinces, and note particularly how Austria is located with respect to Hungary.
b. Do you think political unity in Austria is strong? State your reasons.
c. Who are the governing people in Austria? What percentage of the population are they, and how do they maintain their political control?
4. Apply questions 3b and 3c above to Hungary.
5. How nearly is Austria-Hungary an economic unit? (See table page 38.)
6. In making up her armies would it be wise for Austria-Hungary to mix the different races in the unit, say regiments, or make separate units for each race? Explain.
7. What are the elements of strength and of weakness of Austria-Hungary as a political unit? What vulnerable point have the Allies attacked?

8. Is Austria-Hungary an element of weakness or one of strength to Germany as an ally, in the latter's Berlin to Bagdad program? Explain. Should Germany be successful in carrying out this program, what would be the status of Austria-Hungary? Explain.

RUSSIA.

I. Influence of Isolation and Monotony of Climate and Relief on Habits and Character of the People.

General Relations.—The magnitude and solidarity of Russia are in marked contrast to the small size and diversity of the other great European powers. Its area is so great that the various parts have little relation to one another and little interest in each others affairs. In position Russia stands apart from the regions of industrial and commercial activity and may be considered a heterogeneous mass of unorganized and undeveloped possibilities. The world has long wondered whether this mass would gradually become cemented and develop as a unit or whether the disintegrating influences would prevail with the consequent breaking up into smaller nations.

Russia's physical isolation from the leading commercial nations is most pronounced. On the north the Arctic Ocean is of little value as an avenue of communication. Although the port of Murman is now open all the year and Archangel for six to nine months, the uninhabited character of the country around these ports and the great distance from the agricultural and industrial regions prevent them from being much used except under the stress of war. On the east, European Russia merges gradually into the fairly prosperous regions of western Siberia, but farther east an undeveloped and inhospitable tract of mountains interposes a vast obstacle to commerce with Japan and North America. The sale of Alaska to the United States was due to the alienation caused by unbridged distance. On the south Russia is much less effectively isolated than on the north and east. Yet deserts such as those of central Asia, an inland lake like the Caspian Sea, and high mountains like the Caucasus Range, which runs west as far as the Sea of Azov, are a most effective barrier to prosperous commercial enterprises. Only from the Sea of Azov westward does the Black Sea for a few hundred miles offer easy access to the outside world. Yet even there the straits of the Bosphorus and the Dardanelles under the rule of their former Turkish masters checked the flow of commerce. On the west a rigorous climate bars Russia from Scandinavia on the north, while in the south the rugged topography of the

Carpathians interposes a less formidable barrier toward Austria. Only in the middle is there no effective barrier. It has been well said that "Germany is Russia's only neighbor."

The Great War clearly demonstrated the physical isolation of Russia. Hostilities with the Central Powers closed the greater part of her commercial frontier. The difficulties of furnishing supplies through the White Sea and the Pacific ports were so great that her fighting efficiency became quickly and most seriously reduced. This led to military disasters which in turn made possible the revolt which overthrew the government. With the complete withdrawal of the Allies' support Russia lay prostrate, and the Allies were confronted by the question of how to give real assistance to the fallen country. The fact that isolation from Germany is less complete than from the Entente Allies makes this question the more difficult of solution.

The monotony of Russia does as much as the isolation to retard her progress. One of the most pronounced elements of monotony is the absence of regions of high relief. Most of the plain of European Russia is less than 600 feet above sea level, and almost nowhere are there heights exceeding 1,200 feet.

Only on the borders of the country, in the Urals, Caucasus, and southern Crimea does the land rise into real mountains. Because of their peripheral location these mountains tend toward isolation and do not give topographic variety to the great interior. The Valdai Hills, whence flow some of the longest rivers in the world, reach an altitude of only 1,150 feet. Though important as a watershed, they have little effect on the general topography of the plain, and the rivers which flow from them are rarely interrupted by rapids and falls such as characterize the streams of more rugged countries. Thus European Russia may be considered as a vast unbroken plain hemmed in on all sides but the west by icebound ocean, mountains and inland seas.

The climate of Russia also tends toward monotony. On the whole it is but slightly affected by the ocean and hence is classed as typically continental. On the west, to be sure, from Petrograd southwestward to Poland the influence of the Atlantic penetrates across the plains of southern Scandinavia and northern Germany. Here the precipitation averages above 20 inches per year. Much of it comes as snow and covers the ground for more than four months. Low as this precipitation is and cold as western Russia may be, the influence of the ocean is still clear, for farther inland toward the east the winters are colder, the summers hotter, and the rainfall less than in the Baltic

and Polish regions. In some places the range from the highest to the lowest temperature is 150° F.

The plains of Russia permit the cold winds from the north to reach far to the southward. Hence, even at Odessa the snow cover lasts from 70 to 90 days per year. Likewise, in summer the hot winds from the dry southeast may carry their blasting effects into the agricultural interior. Thus, in southeastern Russia the rainfall is much less than in western Russia, and the region around the Caspian Sea is very arid.

In spite of the great extremes of temperature the climate of Russia brings intense monotony into the life of the Russians. In the first place, all parts of the country are so much alike that intercourse of one part with another is not able to do much in the way of introducing new ideas. In the second place, a far more important effect is due to the fact that the cold winters make it almost impossible for the farmers to do any work half the year. The winter days are short and dark, for even Odessa in southern Russia lies as far north as Quebec. Since most of the Russians are farmers this means that for many months the majority of the people sit in their close, stuffy houses, doing nothing. They talk and talk and plan great things, but during the winter nothing can be accomplished. Then when spring finally comes in May there is a sudden rush of farm work which for a time takes all the people's energy. They can not work so well, however, as people who are in the habit of steady work at all seasons. Thus, the Russians as a people have acquired the habit of being idle for long periods and working vigorously but not very effectively at others. They have also acquired the habit of making great plans but not carrying them out.

Although the habits of the people are much the same all over Russia, there is a good deal of diversity of race and language. Except in the case of border peoples, like the Georgians, all the races of Russia except the Jews have lived upon terms of comparative equality and have shown little jealousy of one another until they were stirred up by Germany. The Tartars of the southeast, the Cossacks of the south, the Little Russians, the Poles, and the Lithuanians are conspicuous examples of diverse peoples who are ready and able to live together in harmony if only they are all given equal rights in a just government.

Special Problems.

1. *The physical isolation of Russia.*—On an outline map of Europe or Eurasia locate seaports and inland border towns through which

trade may be carried on by Russia with foreign countries. Which of these cities are so situated that their ocean communications are not controlled by any other country? What physical and climatic conditions impair the value of these places as commercial gateways? List those controlled by Germany; by Austria and Hungary; by Turkey; by Sweden. Compute the approximate distances of Petrograd, Moscow, Kiev, and Samara (1) from the northern ports of Murmansk and Archangel, (2) from Vladivostok, (3) from the German frontier.

From these data prepare a statement as to the connection between Russia's isolation and her failure in the Great War.

2. *Relief*.—Plains are generally considered to be highly favorable to national progress. They afford easy communication (1) by rail, (2) by wagon road, (3) by canal, and (4) by river. (5) They are blessed with deep rich soil, and (6) they permit of a dense population. Show in detail whether Russia really enjoys these advantages. In these respects how does Russia compare with the western lowland of Europe and with the Mississippi Valley region of the United States? On this basis do you think that the relief of Russia is an advantage or a disadvantage? How far is it responsible for the fact that Russia is the most backward of the great powers of Europe?

3. *Climate*.—On an outline map mark the belts where the rainfall is less than 10 inches, 10 to 20 inches, above 20 inches. On the same map draw the isotherms for July in solid lines and for January with dotted lines. How much of Russia is too warm for man's best physical development in summer? How much is too cold for great mental activity (average below 32°) in winter?

Compare the position of Russia with that of Canada. Compare rainfall and temperature conditions of Russia with those of the parts of Canada and the United States lying east of the Rocky Mountains.

Take another outline map of Russia and with the Atlas of World Agriculture as a guide mark by selected symbols the areas where spring wheat, winter wheat, barley, rye, and forests are most abundant. What relations are evident between climate and agriculture? To what extent does climate create diversity of interests in Russia? Compare the interests of the herdsmen in the dry southeast with those of the peasants who raise rye in the central regions and those who raise wheat in the south. How do these differences compare with the difference between the manufacturing people of the west or north of England and the farming people of the eastern plain.

4. *Summary*.—Write out a brief statement of the influence of

position, climate, and relief in shaping the trend of Russian development. Distinguish between effective and ineffective influences.

II. The Resources of Russia in Relation to Other Countries.

Minerals.—Notwithstanding the monotonous relief of Russia the mineral resources are highly varied and abundant. Among these should be named coal, iron, petroleum, gold, platinum, mercury, manganese, salt, and building stone. (See table page 45.)

Although coal of some kind is mined in several parts of European Russia, good coal is found only in the Donetz basin of southern Russia and in the Dombrov district of Poland. Other good deposits are found in central Siberia south of Tomsk, but they are far from Europe.

Although the demands arising from proximity to other minerals and to industrial centers are greatest near the Polish coal, development has been greatest in the Donetz basin because of both quality and quantity. There has been little development in the Caucasus, in Turkestan, and in Siberia.

Iron ore of good quality is found in Ekaterinoslav and Kherson. Deposits are also worked in the Ural region in central Russia and in Poland but are generally of lower grade than those first named. Farther to the north in the lake country are some bog ores of inferior quality.

In petroleum, Russia has been a great producer. The Baku region stands as a conspicuous example of intensive development in a country where extensiveness is almost a national characteristic. Outside of the Caucasus-Caspian Sea region petroleum has been found in the Urals and in Turkestan, but no great production has yet occurred.

The Caucasus region is rich in manganese. Before the Great War this was one of the principal sources of the world's supply and large quantities were exported to England, the United States, and Germany.

The Urals are especially rich in gold and platinum. In gold Russia ranked fourth among the countries of the world and in platinum pre-eminently first, producing over 90 per cent of the total supply.

Find the per capita production of coal, iron, petroleum, and gold in Russia, Germany, England, Mexico, Japan, Canada, and the United States. What do your figures indicate as to the importance of mineral industries in Russia?

Forests.—Russia ranks as one of the foremost countries of the world in forest resources. This is true no matter whether Siberia be in-

cluded or not. The forest belt extends almost entirely across Russia from Petrograd eastward and southeastward to the Urals and on into Siberia. To the north lie the tundras and to the south the treeless steppes. The upper slopes of the Caucasus are forested and the Ural region is heavily tree-covered. The importance of the timber supply is reflected in the general use of wood for houses and boats as well as for fuel, both in houses and for locomotives. The forests are largely government owned and have been developed for the double purpose of conservation and revenue.

Soils.—The soils of Russia are varied and predominately fertile. The northern part is glacial and in the northwest in Finland and northward, boulders of all sizes are numerous. These were transported by the ice from the northern Scandinavian mountains and from the granitoid outcrops of Finland. As one leaves this district and goes eastward or southward the texture is finer, so over much of the glaciated area the soil is a mixture of sand, silt, and clay much like that of Iowa or northern Illinois. Still farther south lies the famous "black earth country" with a soil of high fertility, greatly resembling the *loess* of the Mississippi Valley region and by some claimed to be identical with it. This lies southwest of Moscow and comprises an area of over 350,000 square miles. Southeastern Russia is an old-seabottom, parts of which have become highly impregnated with salts due to the evaporation of saline brines and a rainfall so low that they have not been leached out. On the whole, however, even this area is fertile. Its productivity is low because of insufficient rainfall rather than because of an unresponsive soil.

Specific Problems.

1. *Mineral Resources.*—A. Mark on an outline map the principal iron ore regions. For each iron ore district determine its distance to the nearest important coal field. In general how do distances compare with those from northern Minnesota to Chicago and the ports on Lake Erie? From maps in the Industrial Atlas study transportation facilities between coal and iron regions. Compare Russia, the United States, England, and Germany in this respect.

B. Locate definitely the principal centers of petroleum production. From the Statesman's Yearbook or the encyclopedia determine the approximate production and exports of petroleum from Russia. How did Russia compare with the United States before the war? How account for the high state of development of this industry? What

relation have the petroleum regions borne to the military operations in the southeast?

C. What are the principal uses of platinum? What countries served as the principal markets? What effects have Russia's internal disorders had on the production of platinum? How has this affected the Allies?

2. *Soils and Agriculture.*—Correlate the principal cereal-producing areas of Russia with the kinds of soils which predominate there. What is the determining factor in giving rise to the cattle industry of the Cossack region? Compare the soil and topographic conditions of the wheat region of Russia with those of the wheat regions of the Central Plains of the United States. What varieties of wheat and oats, developed in Russia, have been introduced into the United States with extraordinary success?

From information obtainable in the yearbooks of the U. S. Department of Agriculture determine the rank of Russia in production and exports of wheat, rye, barley, oats, and sugar beets. In general, what is true of yields per acre compared with other countries? How account for this? To what countries did Russia export large quantites of grain before the war? How did Russia's entry into the war affect her commercial relations in this regard? What was the effect on the demand for supplies from the United States?

Summarize Russian agriculture in its relation to soil belts; to climatic conditions; to home consumption; to foreign trade.

3. *The Forest.*—Summarize the climatic conditions prevalent in the forested region as regards temperature, rain and snow. What apparently marks the northern limit of forests? What the southern limit? What possible use can be made of forest products west of the Urals in the iron ore region?

Trace the trans-Siberian railroad from Petrograd to Moscow and eastward. What relation does it bear to the forested zone? Infer the use made of the forest in building this railway.

Summary.—Make a list of the 15 largest cities of Russia and locate them on the outline map.

From the preceding studies of climate, minerals, soils, and forests, together with distribution of population as indicated by the location of cities, prepare a concise summary of the industrial development of Russia as affected by these factors. In this connection discuss also the human element and bring out clearly the geographic advantages and disadvantages.

ITALY.

Contrast Between North and South Italy.

General Statement.—Few countries of equal size are more diverse than Italy. The north is among the most prosperous and progressive parts of the world, but the south is decidedly backward. In the north not only is agriculture highly developed, but manufacturing is well advanced in proportion to the resources of coal and metals, and science and art are well established. In the south, on the contrary, there is almost nothing in the way of manufacturing, in spite of the fact that water transportation is easier than in the north. Instead of science and art there is the most widespread illiteracy. Farming is the chief occupation, but it is carried on much more carelessly than in the north. Moreover, a large number of the farmers also lazily depend upon flocks. The population is much less dense than in the north, but the people are poorer, in spite of the larger amount of land at their disposal. Many are undernourished, and this combines with other things to cause disease.

A traveler in northern Italy observes about the same sort of city and country life as in the rest of western Europe. But when he reaches southern Italy he is struck with the atmosphere of ease that is found in cities and in the country. Doorsteps are often filled with idle people. Happy lolling seems a popular occupation. Idle hands seem more common than busy ones. To many travelers, "sunny" Italy of the South is remembered as "lazy" Italy, while northern Italy seems a land of industry.

Problems.—1. In order to understand this contrast between the north and south the first necessity is to compare the climatic differences. On a map of the rainfall of Europe find the average rainfall in the north and in the south of Italy. Which part gets a rainfall favorable to the growth of crops while the temperature is favorable, that is, in the warmest six months of the year? Which part must depend chiefly on irrigation? In the encyclopedia or Bartholomew's Atlas find the temperature by months at Naples or some place south of that city, and compare it with a similar record of some place, such as Milan, in northern Italy. How many months average above 65° in each case, and how many average below 40° ? What do you infer from this as to the stimulating quality of the climate in the two regions?

2. Look up malaria in the encyclopedia and other sources. What do you find as to the distribution of malaria in Italy? Remember that

malaria occurs chiefly in places where pools of water are stagnant during the summer. Are such pools likely to appear in a place where irrigation is practised and where during the dry season the streams diminish until only small pools remain, or in places where the rainfall is sufficient to keep the streams running all the year?

3. Enumerate the neighboring peoples of northern Italy. With what peoples do the southern Italians come into easy contact? What effect should these different sets of neighbors produce upon the northern Italians as contrasted with the southern Italians?

TURKEY.

Constantinople and the Straits as a Geographic and Political Problem.

General Statement.—The Straits near Constantinople are the only water barrier between southeastern Europe and the part of western Asia between the Black and Mediterranean Seas. The narrow channel of the Bosphorus which unites the Black Sea with the Sea of Marmora is 18 miles long with a minimum width of 800 yards, a maximum width of $2\frac{3}{4}$ miles, and a depth of 66 fathoms in mid-stream. In the center a strong surface current from the Black Sea sometimes reaches a speed of about six miles an hour in narrow places, but below the surface and along the shores there is a strong counter-current. The narrowness of the Straits and their "bottle neck" character makes them easy of military control. This is one reason why Russia has never been able to wrest them from Turkey, in spite of the fact that Russia's great grain trade and much of its other trade must pass this way. Herein also is the main cause of the British naval disaster at the Dardanelles in 1915.

From the earliest times there has been a constant flow not only of trade along the waterway at Constantinople but of immigrants into Europe across the Straits. This is evidenced by the racial stratification of Europe in the Balkans and farther west in Europe. Usually, the farther westward the race the earlier the time of its invasion.

From very early times commerce as well as immigration has made this a principal route between Asia and Europe. Here the silks of China, the spices and gums of the Spice Islands and of India, and the coral and jade of India—products of high value and small bulk—were brought in exchange for the metal ware, coin, and other products of western Europe. It was largely to this traffic that Constantinople owed its early growth; the benefits of the trade were felt even as far as the towns of western Europe. The strangling of this trade by

the Seljukian Turks, which culminated in their capture of Constantinople in 1453, had an important bearing on the ultimate rounding of the Cape of Good Hope by the Portuguese and the discovery of America. The so-called Berlin to Bagdad route is an attempt to revive this land route. Naturally, Constantinople, where the water traffic between the Black and Mediterranean Seas meets this land traffic, has always been one of the world's great cities and is today one of the most difficult problems before the peace conference.

Before the war, the Russian Empire, in spite of its control of between one-seventh and one-sixth of the total land surface of the globe, had no ice-free ports other than those on the Black Sea. These were of little value so long as their outlet to the Mediterranean was controlled by a foreign power. For two and a half centuries one of the great objects of Russian expansion was to gain control of an ice-free port to the open sea. Germany checked westward expansion, Japan prevented any Russian control of ice-free ports on the Pacific south of Vladivostok, England gave Russia no chance to expand to the Indian Ocean, and Turkey backed by England kept the doorway of the Bosphorus and Dardanelles tightly closed to Russian warships. Thus Russia, and particularly the great cereal-producing regions of European Russia, felt seriously handicapped by the lack of an unrestricted outlet to the sea. Thus the importance of Constantinople and the Straits was constantly brought to the world's attention.

In addition to all this, Constantinople is vitally important because a strong nation in control of the Bosphorus stands always as a menace to British control of Egypt and of India, and threatens the severance of the flow of British commerce through the Suez Canal.

To summarize, there are three vitally important points to consider in connection with the geography of the Straits at Constantinople: (1) the great land route between Europe and Asia; (2) the Straits as the natural water outlet of the great agricultural regions of southern Russia; and (3) Great Britain's vital interests in Egypt and in India.

Problems.—1. How does this three-fold importance of the Straits account for the fact that Turkey, the "sick man of Europe," with its misrule has been able to maintain its control of Constantinople?

2. Write an estimate of the relative importance of the Straits to Russian, British, and German interests both commercially and politically. Account for the present British and Russian relationship in regard to them.

3. What advantages and disadvantages are there in having a weak nation controlling the Straits?

4. State arguments for and against internationalizing the Bosphorus; who would gain, and who would lose if this were done?

THE BALKANS.

General Relations.

The Balkan countries of Serbia, Bulgaria, Greece, and Turkey owe their troubles largely to the following conditions:

(1) The natural resources of this region are not particularly good; although there are some metal deposits in the mountains they are not developed and do not include much iron and, especially, coal, which is by far the most important.

(2) Agricultural conditions are not favorable. The chief difficulty arises from the extreme variability of the rainfall. For a few years the rainfall is abundant, the crops are good, and the peasants prosper. Then come a few bad years when the rain is insufficient, crops on the poorer lands fail, and the unfortunate peasants fall into poverty and debt.

(3) Another unfavorable condition is the thin rocky soil. This is due partly to topography and partly to summer droughts followed by floods. A glance at the map will show that a large percentage of the region is made up of hill and mountain slopes. These retain only the coarser soils. Many of the peasants have found it impossible to support themselves by raising crops and have turned to flocks and herds. These they pasture among the mountains, for grass is there fairly plentiful. In such a country, lawlessness and quarrels are very likely to arise. Herdsman are especially prone to encroach upon the rights of others, especially in times of insufficient rain when the grazing is poor. Then they take their famished flocks to places claimed by their neighbors. Thus, the poverty of the Balkans tends to create a spirit of unrest. It also fosters illiteracy, for the people can not afford to have schools. In addition to this, the poverty arising from the natural conditions prevents the building of good roads and railroads and thus keeps the people apart so that they see little of the outside world and remain separated and suspicious.

(4) Another difficulty in the Balkans arises from the fact that the country is cut up into a great number of small valleys and basins. Each of these is more or less separated from its neighbor by mountain ridges and hills. To connect the basins by roads

would be hard even for a prosperous people, since they must either cross bare rocky slopes or follow narrow and, in many places, difficult valleys. The result is that the basins are isolated from one another. Each valley looks out for itself and knows little of its neighbors.

(5) A fifth difficulty of the Balkans lies in the fact that because of their division into mountain valleys and basins and because they are hard to penetrate they have become the refuge of many different races. Since the Balkans form the bridge between central Europe and western Asia, the races are drawn from both regions. Some have crossed the Bosphorus and Dardanelles, others have been forced in from the plains on the north. Still others have migrated from the south. When once one of those races becomes lodged in the mountains the conditions of poverty and lack of roads and isolation tend to preserve its old habits, language, religion, and prejudices. In consequence, the differences among the diverse people have been preserved and accentuated rather than wiped out. Thus, it comes to pass that the Balkans are a sad mixture of many races.

(6) Finally, the Balkans suffer because they are in the pathway from central Europe to the East. The main railroad from central Europe passes up the valley of the Morava River to Nish. There it turns up a side valley and crosses into the valley at the Maritsa and so proceeds through Bulgaria to Adrianople and thence to Constantinople. Another branch continues south from Nish and down the valley of the Vardar to Salonika. These two lines form main highways of communication to the Mediterranean and the East. Hence, Germany and Austria have been eager to control them. That was one reason for the present war. So, to the difficulties of their own region are added the intrigues of outside nations. Yet the ever-present cause of the trouble of the Balkans is found in their rugged relief and poor soil and in their separation into many basins, inhabited by a poverty-stricken people of diverse races, antagonistic one to another.

Problems on the Balkans

In order to appreciate the present condition of the Balkans and their historic significance, we must understand the effect which has been produced by the combination of the six conditions mentioned above.

Go to the encyclopedia, to Mill's International Geography, and to other reference books, and make a list of the following facts:

- (1) The races that inhabit the Balkan area.

- (2) The languages spoken there.
- (3) The religions or great branches of the Christian church which there have a foothold.
- (4) The wars in which the Balkans have had a part since 1600 A. D.

- (5) The percentage of illiteracy in the various Balkan countries.
- (6) The per capita value of the exports and imports.
- (7) The size and names of the ten chief cities.

Write out a statement of the way in which the six geographic conditions named above have influenced the Balkans in respect to these seven points. Compare the Balkans with France and the United States in these seven points.

SPAIN

I. The influence of the Peninsular Position of Spain.

The Iberian Peninsula, like Italy and Korea, is a natural unit which favored the development of an individual race from a common stock. It is bounded by the sea except on the north, where the lofty Pyrenees shut it off from continental Europe. Spain alone may be considered a unit because of the wide stretch of inhospitable country which lies along the Portugal border. The early settlements on the coast and lower stretches of rivers of Portugal were far removed from the settlements on the Mediterranean, and even today the intercourse between Spain and Portugal is chiefly by sea.

Within the boundaries thus marked out is a group of geographic conditions to which the inhabitants must adjust themselves and from which they can not escape. The Pyrenees with only three practical passes in a distance of 250 miles have proved a more effective barrier than the Strait of Gibraltar and the quiet waters of the Mediterranean. The coast on the north is rocky and steep with fiordlike indentations which serve as harbors, but the region adjoining the coast is mountainous and access to the interior from this direction difficult. The eastern coast has alternate stretches of low shore and rock cliff, and the southern coast from the mouth of the Guadiana to Gibraltar is bordered by flat land. Along this stretch of shore and eastward to Cartagena the peninsula is easily accessible from Africa—a geographic fact which has had a profound effect on the development of Spain. The Roman, Carthaginian, and Mohammedan conquerors came by sea from the south

and the east. Spain is the connecting link between Europe and Africa.

Compare the boundaries of Spain with those of Germany, of France, of Italy, of the United States. What political advantages do they afford? What advantages do they give Spain as a seafaring nation?

Discuss the following quotations: "Africa begins at the Pyrenees"; "In almost all periods of history either the masters of Spain have borne rule in Africa or the masters of Africa have borne rule in Spain."

Note that Spain owns Cueta and five other stations on the Morocco coast and that Spain's natural relation to Morocco and her special interests in that country were recognized by the Algeciras convention of 1905.

II. The Influence of a High Plateau.

Although bordered by the sea, Spain has the features of a continental mass. It forms a huge block with an average elevation of about 2,500 feet, terminating seaward in steep slopes. It is girdled by a narrow coastal plain except on its northwest and northeast borders. It is the highest country of Europe in average altitude, and its capital city has the highest altitude. This great central table-land with ranges of east-west mountains affords no natural traffic routes from the Atlantic to the Mediterranean or from southern Spain to other countries of Europe. The surface of the plateau is cut by gorges and canyons, and only a few rivers are navigable for short distances from the sea. Spanish rivers have been described as having "a long name, a narrow channel, and very little water." Railroads follow circuitous routes with steep grades and many tunnels and cross passes at elevations 4,000 to 6,000 feet above sea level.

On a physical map of Spain trace the course of the principal rivers and note their rapid descent as they pass from the plateau to the coastal plain. Trace the line of railroad from Valencia to Madrid, from Lisbon, Portugal, to Madrid. What does it indicate as to the topography and accessibility of the central plateau?

The plateau embraces two large lowland valleys, Ebro and Guadalquivir, which gave rise to the important ancient provinces of Aragon and Seville. Compare the number and size of the cities within these valleys with those on the adjoining highlands.

The climate of Spain presents great contrasts. In the provinces bordering the Bay of Biscay the rainfall is abundant and the temperature mild throughout the year. Outside of this small area the climate of Spain is characterized by deficient rainfall and extremes of temperature. On the southeast coast the small precipitation comes in winter, and irrigation is necessary along the whole Mediterranean border. The coast strip from Gibraltar to Almeria has the warmest winter climate of Europe, and this region and the oases in Murcia are the only places in Europe, where the date palm ripens. The climate of the central plateau, which embraces about five-sixths of Spain, is very unlike that of any part of the coast. On this great bare table-land spring and autumn are usually pleasant seasons, although cold mists of spring may envelop the land for days; the winters are cold and wet; the summers are warm and dry. Cold rains and snows which last short periods give to the plateau a cheerless aspect in winter. In summer, hot days followed by cold nights and long periods without rain or even clouds give the plateau a dried-out and sunburnt appearance. Vegetation withers, the roads are deep with dust, and the air for weeks at a time is gray and hazy with dust.

From the viewpoint of occupation and settlement the climatic elements of primary importance which characterize the central plateau are deficient rainfall and great and sudden changes of temperature. The topographic feature of greatest significance is the presence of valleys within the plateau, valleys which have milder climate than the adjoining uplands. The natural vegetation on the plateau is chiefly grass and shrubs.

Bearing in mind the rainless summers and the short and variable growing season, what food products would you expect to find grown on the plateau? What parts of Spain produce grain, fruit, animal products? To what extent and in what parts of Spain is irrigation practised?

What is the location of the three provinces having the smallest population per square mile? How many of the ten largest cities of Spain are accessible to seagoing ships? Note the position of Madrid with reference to agricultural and mining regions and convenient routes of transportation. Has its location any geographic advantages?

One-fourth of the productive soil of Spain is natural grasslands unsuitable for agriculture. To what extent is Spain a sheep-pro-

ducing country? A characteristic feature of plateau life is the periodic migration of herds from highlands to lowlands in winter, returning to the highlands in summer. Is this necessary or merely a custom? Why have stringent laws governing this migration been enacted? What conflicting interests have the herdsman and the agriculturist?

The inhabitants of Spain, with unimportant exceptions, constitute a racial unit but not a linguistic unit. Basque, Castilian, and Catalonian languages are spoken. Castilian is spoken by the plateau people and has become the official and widespread language. Catalonian is the language of the Ebro Valley and of the eastern coast. Basque is the language of the region near the junction of the Cantabrian and Pyrenees Mountains.

From an encyclopedia or other reference work, find in what respects these languages differ. On a physical atlas note the location of these language groups. Have geographic factors been influential in the development of these languages? Note the position of the little republic of Andorra, which has maintained its independence for a thousand years.

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